

Hydraulic Pumps and Directional Valves

ENERPAC 
POWERFUL SOLUTIONS. GLOBAL FORCE.

Enerpac hydraulic pumps are available in over 1000 different configurations. Whatever your high-pressure pump needs are... speed, control, intermittent or heavy duty cycle you will find an Enerpac pump suited to the application.

Featuring Hand, Battery, Electric, Air and Gasoline powered models, with multiple reservoir and valve configurations, Enerpac offers the most comprehensive pump line available.



Pump Selection

For help in selecting the correct pump for your application, please review our 'Yellow Pages'.

If you require further assistance, contact the Enerpac office located near you.

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Torque Wrench Pumps

System matched air and electric pumps provide control to operate Enerpac Torque Wrenches.

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Pumps and Directional Valves Section Overview

| Power Source | Pump Types | Maximum Reservoir Capacity (litres) | Max. Flow at Rated Pressure (l/min) | Max. Power Consumption | Series | Page |
|-----------------------------------|---|-------------------------------------|-------------------------------------|----------------------------|--------------|--|
| Manual | Lightweight Hand Pumps Exclusively from Enerpac | 2,5 | 2,50 (cm³/stroke) | — | P |  62 ► |
| | ULTIMA Steel Hand Pumps | 7,4 | 4,75 | — | P |  64 ► |
| | Low Pressure Hand Pumps | 3,3 | 9,50 | — | P |  66 ► |
| | Multifluid Hand Pumps Pumping Fluids up to 1000 bar | — | 21,8 (cm³/stroke) | — | MP |  68 ► |
| | Foot Pump For Hands Free Operation | 0,5 | 2,47 (cm³/stroke) | — | P |  69 ► |
| | Ultra-High Pressure Hand Pumps Pressure up to 2800 bar | 1,0 | 2,49 (cm³/stroke) | — | P 11 |  70 ► |
| Electric | Battery Powered Hydraulic Pumps Cordless Hydraulic Power | 2,0 | 0,25 | 0,37 (kW) | XC |  72 ► |
| | Economy Series Compact and Portable | 3,8 | 0,32 | 0,37 (kW) | PU |  74 ► |
| | Submerged Series Powerful and Low-Noise | 5,5 | 0,27 | 0,37 (kW) | PE |  76 ► |
| | Z-Class Pumps, Portable | 40 | 1,0 | 1,25 (kW) | ZU |  82 ► |
| | Z-Class Pumps, Heavy-Duty | 40 | 2,73 | 5,60 (kW) | ZE |  88 ► |
| | Split Flow Pumps Multiple outlets with equal oil flow | 150 | 4,20 | 11 (kW) | SFP |  94 ► |
| Air | XA-Series Pumps, with XVARI® Technology For Productivity and Ergonomics | 2,0 | 0,25 | 991 (l/min) | XA |  96 ► |
| | Turbo II Air Hydraulic Pumps Compact Air Over Hydraulic | 5,0 | 0,16 | 340 (l/min) | PAT |  98 ► |
| | Air Hydraulic Pumps Single and Twin-Air Motor | 1,3 8,0 | 0,13 0,15 | 255 (l/min) 510 (l/min) | PA PAM |  100 ► 101 ► |
| | Z-Class Air Hydraulic Pumps Modular Air Pumps | 40,0 | 1,31 | 2840 (l/min) | ZA |  102 ► |
| Gasoline | Z-Class Gasoline Hydraulic Pumps Gas Powered High Flow Pumps | 40,0 | 1,64 | 4,8 (kW) | ZG5 |  104 ► |
| | Z-Class Gasoline Hydraulic Pumps Gas Powered High Flow Pumps | 40,0 | 3,30 | 9,7 (kW) | ZG6 |  106 ► |
| | Atlas PGM-Series Small and Lightweight | 8,0 | 0,66 | 2,2 (kW) | PGM |  107 ► |
| Directional Control Valves | | | | | VM, VC VE |  108 ► |

P-Series, Lightweight Hand Pumps

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▼ Shown from top to bottom: P-802, P-842, P-202, P-142



- Lightweight and compact design
- Durable glass-filled nylon reservoir and nylon encapsulated aluminium pump base for maximum corrosion resistance
- Two-speed operation reduces handle strokes by as much as 78% over single speed pumps
- Lower handle effort to minimize operator fatigue
- Integral 4-way valve on P-842 for operation of double-acting cylinders
- Handle lock and lightweight construction for easy carrying
- Large oil capacities to power a wide range of cylinders or tools
- Non-conductive fiberglass handle for operator safety
- Internal pressure relief valve for overload protection.

▼ Cylinder-pump set SCR-254H used to support the construction while monitoring pressure and load with the gauge.



Exclusively from Enerpac



Cylinder Matching Chart

For help in selecting the correct hand pump for your application, please refer to the Cylinder Matching Chart located in the 'Yellow Pages'.

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Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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Tank Kits:

When a return-to-tank port is required, the Tank Kits provide a $\frac{7}{16}$ " -20 UN port at the rear of the reservoir.

| | |
|-------|--------------------------|
| PC-20 | Fits P-141, P-142 |
| PC-25 | Fits P-202, P-391, P-392 |



High Temperature and Corrosion Resistant Hand Pumps

The P-142 and P-392 hand pumps are available with

Viton® seals, stainless steel pistons and anodized aluminium reservoir for use in extreme environments.

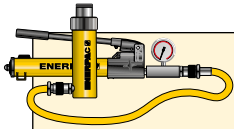
Page: 56

| Pump Type | Usable Oil Capacity (cm ³) | Model Number | Pressure Rating ** (bar) | | Oil Displacement per Stroke (cm ³) | | Max. Handle Effort (kg) |
|--------------|---|--------------|-----------------------------|-----------------------|---|-----------------------|----------------------------|
| | | | 1 st stage | 2 nd stage | 1 st stage | 2 nd stage | |
| Single-Speed | 327 | P-141 | - | 700 | - | 0,90 | 32,7 |
| | 901 | P-391 | - | 700 | - | 2,47 | 38,6 |
| Two-Speed | 327 | P-142* | 13 | 700 | 3,62 | 0,90 | 35,4 |
| | 901 | P-202 | 13 | 700 | 3,62 | 0,90 | 28,6 |
| | 901 | P-392* | 13 | 700 | 11,26 | 2,47 | 42,2 |
| | 2540 | P-802 | 27 | 700 | 39,33 | 2,47 | 43,1 |
| | 2540 | P-842 | 27 | 700 | 39,33 | 2,47 | 43,1 |

* Available as set, see note on next page.

** Contact Enerpac for applications where operating pressure is less than 10% of pressure rating.

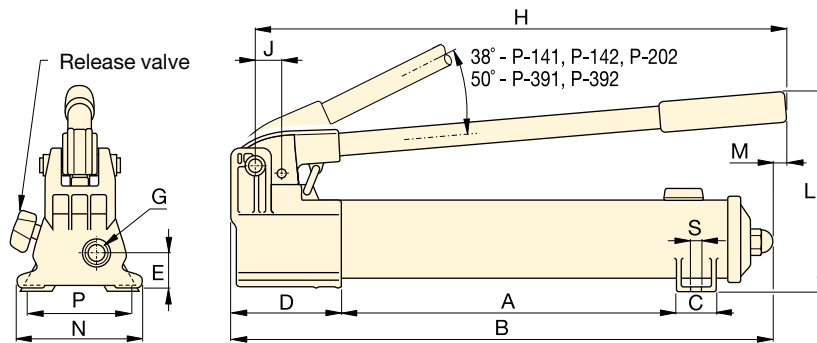
Lightweight Hand Pumps



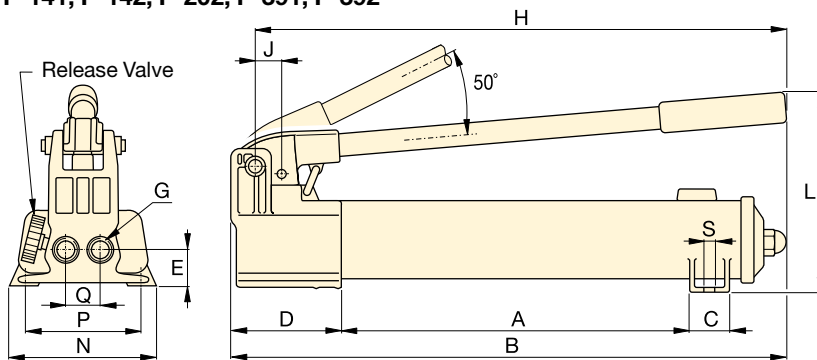
Pump-Cylinder Sets

All pumps marked with an * are available as **sets** (pump, cylinder, gauge, couplers and hose) for your ordering convenience.

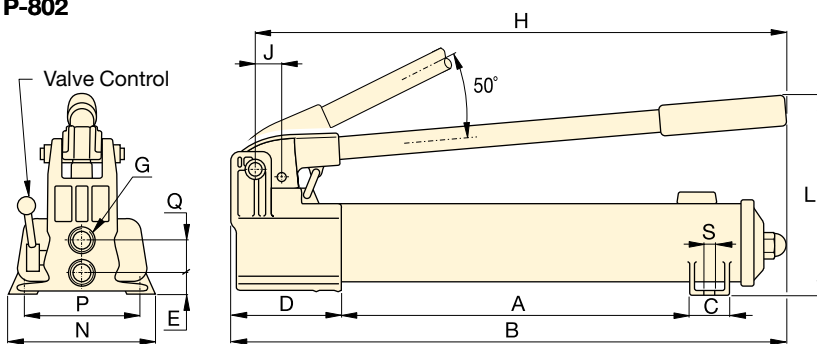
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P-141, P-142, P-202, P-391, P-392



P-802



P-842

P Series



Reservoir Capacity:

327 - 2540 cm³

Flow at Rated Pressure:

0,90 - 2,47 cm³/stroke

Operating Pressure:

700 bar



Hoses

Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the

System Components section for a full range of gauges.


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Foot Pump P-392FP

For handsfree operation the lightweight and robust **P-392FP** Foot Pump is the perfect choice.

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| | Piston Stroke | Dimensions (mm) | | | | | | | | | | | | | |  | Model Number |
|--|---------------|-----------------|-----|----|-----|----|------------|-----|----|-----|----|-----|-----|----|----|---|--------------|
| | | | | | | | | | | | | | | | | | |
| | (mm) | A | B | C | D | E | G | H | J | L | M | N | P | Q | S | (kg) | |
| | 12,7 | 185 | 336 | 28 | 85 | 28 | ¼"-18 NPTF | 319 | 19 | 143 | – | 95 | 80 | – | 7 | 2,4 | P-141 |
| | 25,4 | 344 | 533 | 36 | 99 | 33 | ⅜"-18 NPTF | 522 | 30 | 177 | 16 | 120 | – | – | – | 4,1 | P-391 |
| | 12,7 | 185 | 336 | 28 | 85 | 28 | ¼"-18 NPTF | 319 | 19 | 143 | – | 95 | 80 | – | 7 | 2,4 | P-142* |
| | 12,7 | 344 | 509 | 36 | 85 | 28 | ¼"-18 NPTF | 400 | 19 | 144 | 16 | 95 | – | – | – | 3,4 | P-202 |
| | 25,4 | 344 | 533 | 36 | 99 | 33 | ⅜"-18 NPTF | 522 | 30 | 177 | 16 | 120 | – | – | – | 4,1 | P-392* |
| | 25,4 | 337 | 552 | 45 | 133 | 35 | ⅜"-18 NPTF | 527 | 30 | 228 | – | 181 | 153 | 35 | 10 | 8,2 | P-802 |
| | 25.4 | 337 | 552 | 45 | 133 | 20 | ⅜"-18 NPTF | 527 | 30 | 228 | – | 181 | 153 | 36 | 10 | 10.0 | P-842 |
| | | | | | | | | | | | | | | | | | |

P-Series, ULTIMA Steel Hand Pumps

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▼ Shown from left to right: P-77, P-80, P-84, P-801, P-39



- Reduced handle effort and ergonomic grip for less operator fatigue
- Two-speed operation for fast and easy operation (except P-39)
- Vent free reservoir eliminates spills
- Quick grip handle allows for easy transport
- Integral reservoir over-pressurization protection
- All steel construction, chrome plated plunger and wiper system for durable, long lasting performance
- 4-way valving on the P-84 and P-464 for operation of double-acting cylinders.

▼ In the absence of a power supply, the P-80 Hand Pump offers a powerful solution.



The Solution for Tough Jobs



Two Speed Pumps

Recommended for applications where cylinder plunger must advance rapidly to load contact, and applications where greater oil capacities are required, such as multiple cylinder hook-ups.



Foot Pump Conversion Kits

Convert your P-39, P-77, P-80 or P-801 to foot power with the **PC-11** Kit. Includes instructions for easy conversion.



Gauges

Minimize the risk of over-loading and ensure long, dependable service from your equipment. Refer to the System Components section for a full range of gauges.

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4-Way Control Valve

P-84 and **P-464** feature a manual 4-way control valve, designed for use with one double-acting or two single-acting cylinders. For system set-up information:

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| Pump Type | Usable Oil Capacity (cm ³) | Model Number | Pressure Rating ** (bar) | | Oil Displacement per Stroke (cm ³) | | Max. Handle Effort (kg) |
|-----------|---|---------------|-----------------------------|-----------------------|---|-----------------------|----------------------------|
| | | | 1 st stage | 2 nd stage | 1 st stage | 2 nd stage | |
| Single | 770 | P-39 | - | 700 | - | 2,46 | 39 |
| Two-Speed | 770 | P-77 | 34 | 700 | 16,39 | 2,46 | 40 |
| | 2200 | P-80 * | 34 | 700 | 16,39 | 2,46 | 35 |
| | 4100 | P-801 | 34 | 700 | 16,39 | 2,46 | 35 |
| | 2200 | P-84 | 34 | 700 | 16,39 | 2,46 | 35 |
| | 7423 | P-462 | 14 | 700 | 126,20 | 4,75 | 49 |
| | 7423 | P-464 | 14 | 700 | 126,20 | 4,75 | 49 |

* Available as a set, see note on next page.

** Contact Enerpac for applications where operating pressure is less than 10% of pressure rating.

ULTIMA Steel Hand Pumps

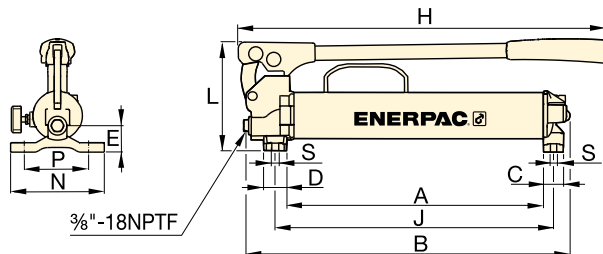
P Series



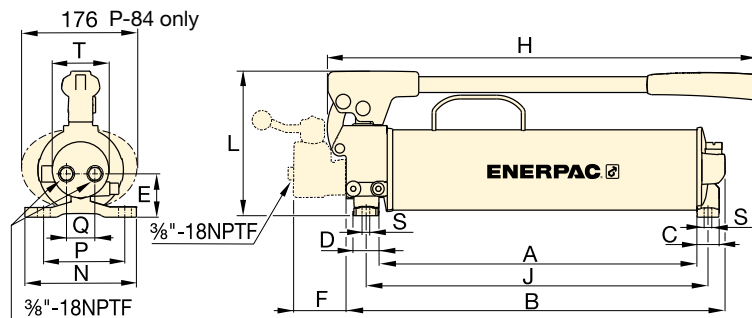
Reservoir Capacity:
770 - 7423 cm³

Flow at Rated Pressure:
2,46 - 4,75 cm³/stroke

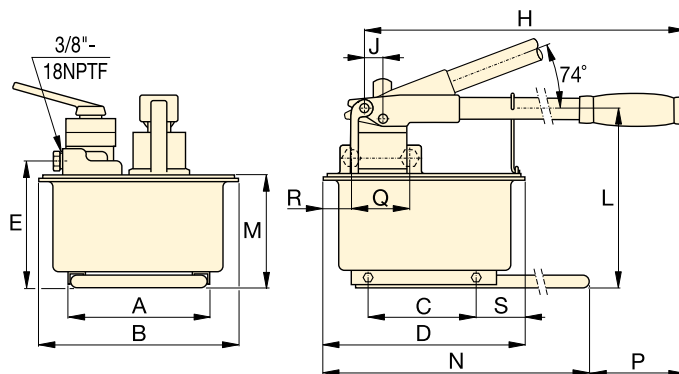
Maximum Operating Pressure:
700 bar



P-39, P-77



P-80, P-801, P-84



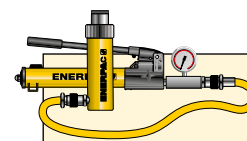
P-462, P-464



Extra Capacity Hand Pumps

P-462 and P-464 feature extra large reservoirs and high first-stage flow rate.

These pumps are ideally suited for powering high-capacity cylinders.



Pump-Cylinder Sets

The **P-80** is also available as **set** (pump, cylinder, gauge, couplers and hose) for your ordering convenience.


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Cylinder Matching Chart

For help in selecting the correct hand pump for your application, please refer to the Cylinder Matching Chart located in the 'Yellow Pages'.

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| Piston Stroke | Dimensions (mm) | | | | | | | | | | | | | | | | |  | Model Number |
|---------------|-----------------|-----|-----|-----|-----|----|---|-----|-----|-----|-----|-----|-----|----|----|-----|----|---|--------------|
| | (mm) | A | B | C | D | E | F | H | J | L | M | N | P | Q | R | S | T | (kg) | |
| 25,4 | 383 | 480 | 30 | 35 | 37 | — | — | 550 | 416 | 163 | — | 140 | 111 | — | — | 8,4 | — | 6,2 | P-39 |
| 25,4 | 391 | 487 | 30 | 35 | 47 | — | — | 550 | 424 | 163 | — | 140 | 111 | — | — | 8,4 | — | 7,1 | P-77 |
| 25,4 | 428 | 511 | 30 | 35 | 55 | — | — | 579 | 460 | 195 | — | 150 | 121 | 42 | — | 8,4 | 74 | 10,7 | P-80* |
| 25,4 | 428 | 511 | 30 | 35 | 55 | — | — | 579 | 460 | 195 | — | 150 | 121 | 42 | — | 8,4 | 74 | 14,1 | P-801 |
| 25,4 | 428 | 510 | 30 | 35 | 55 | 70 | — | 579 | 460 | 195 | — | 150 | 121 | 38 | — | 8,4 | 74 | 11,8 | P-84 |
| 38,1 | 210 | 308 | 163 | 320 | 195 | — | — | 671 | 25 | 270 | 175 | 650 | 92 | — | — | 80 | — | 27,7 | P-462 |
| 38,1 | 210 | 308 | 163 | 320 | 195 | — | — | 671 | 25 | 270 | 175 | 650 | 92 | 89 | 68 | 80 | — | 27,7 | P-464 |

P-Series, Low Pressure Hand Pumps

▼ Shown from left to right: P-25, P-51, P-18



- P-25 and P-50 pump oil in both forward and reverse handle movement improving overall efficiency, ideal when mounting space is restricted
- External load-release valve
- Internal pressure-relief valve for overload protection
- P-51 can be operated in horizontal and vertical position with pump head and oil outlet facing downwards.

When Less Than 700 Bar is All You Need



Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the

System Components section for a full range of gauges.

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Hoses

Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system,

specify only genuine Enerpac hydraulic hoses.

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▼ P-18 hand pump used for locking the rotating table for marble polishing.



| Pump Type | Usable Oil Capacity (cm ³) | Model Number | Pressure Rating (bar) | Oil Displacement per Stroke (cm ³) | Max. Handle Effort (kg) |
|--------------|---|--------------|--------------------------|---|----------------------------|
| Single-Speed | 360 | P-18 | 200 | 2,46 | 16 |
| | 3277 | P-25 | 175 | 9,50 | 27 |
| | 3277 | P-50 | 350 | 4,75 | 27 |
| | 819 | P-51 | 200 | 4,10 | 27 |

Low Pressure Hand Pumps

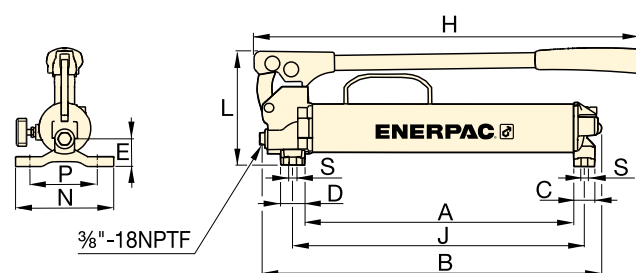
P Series



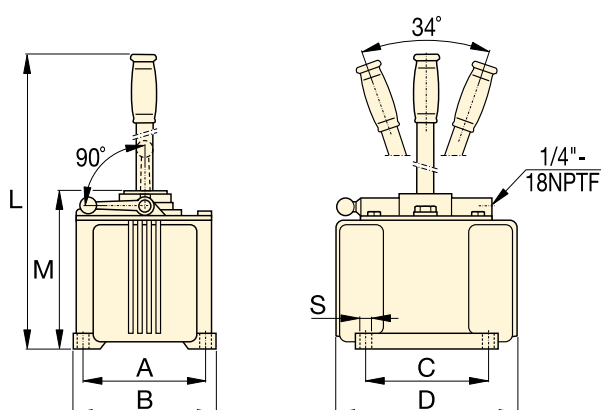
Reservoir Capacity:
360 - 3277 cm³

Flow at Rated Pressure:
2,46 - 9,50 cm³/stroke

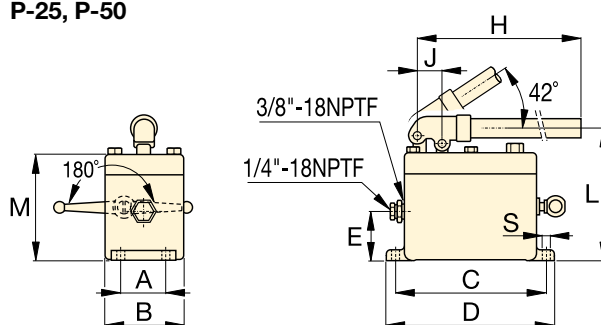
Maximum Operating Pressure:
175 - 350 bar



P-18



P-25, P-50



P-51

MP-Series Multifluid Hand Pumps

Corrosion resistant hand pumps for low pressure filling and high pressure testing applications, suitable for a wide range of fluids.

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▼ P-51 hand pumps used with RC-series cylinders to keep wooden layers under pressure during lamination of plates.



| Piston Stroke | Dimensions (mm) | | | | | | | | | | | | Model Number |
|---------------|-----------------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|--------------|
| | (mm) | A | B | C | D | E | H | J | L | M | N | S | |
| 25,4 | | 221 | 316 | 30 | 35 | 37 | 385 | 254 | 163 | – | 140 | 8,4 | P-18 |
| 38,1 | | 152 | 173 | 152 | 240 | – | – | – | 684 | 200 | – | 10 | P-25 |
| 38,1 | | 152 | 173 | 152 | 240 | – | – | – | 684 | 200 | – | 10 | P-50 |
| 25,4 | | 52 | 92 | 181 | 200 | 57 | 610 | 29 | 160 | 129 | – | 9 | P-51 |

Lightweight Hydraulic Foot Pump

▼ Shown: **P-392FP**



- Robust, durable and compact
 - Steel frame for maximum stability
 - Steel pumping handle
 - Aluminium reservoir
- Foot pedal lock and lightweight construction for easy carrying
- Two-speed operation reduces foot pedal strokes
- Large foot-pad release valve for controlling load descent
- Internal pressure relief valve for overload protection.

P Series



Reservoir Capacity:

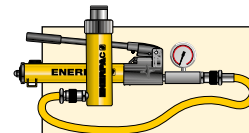
492 cm³

Flow at Rated Pressure:

2,47 cm³/stroke

Maximum Operating Pressure:

700 bar



Pump-Cylinder Sets

The P-392FP is available as **set** (pump, cylinder, gauge, couplers and hose) for your ordering convenience.

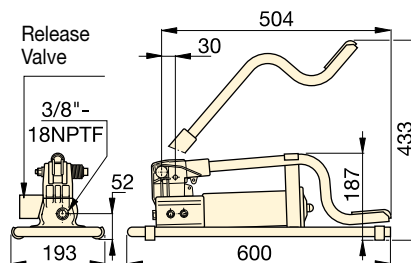
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Hoses

Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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| Usable Oil Capacity (cm ³) | Model Number | Pressure Rating (bar) | | Oil Displacement per Stroke (cm ³) | | Max. Handle Effort (kg) | Piston Stroke (mm) | Piston Stroke (kg) |
|---|------------------|-----------------------|-----------|--|-----------|-------------------------|--------------------|--------------------|
| | | 1st stage | 2nd stage | 1st stage | 2nd stage | | | |
| 492 | P-392FP * | 15 | 700 | 11,26 | 2,47 | 42 | 25,4 | 7,0 |

* Available as set, see note on this page.

▼ P-392FP offers the advantage of hands free operation to handle and control the tool or cylinder.



Ultra-High Pressure Hand Pumps

▼ Shown from left to right: 11-100, P-2282



- Two-speed operation on the P-2282 allows for faster fill operation, reducing cycle times for many testing applications
- 303 Stainless steel construction on the 11-100 and 11-400 models enable use with many different fluids, such as distilled water, diesters, silicones, soluble oils and petroleum
- Large release knob for improved control of pressure release
- Outlet ports are 3/4"-16 cone for 2800 bar rating
- Ultra-high pressure fittings feature all stainless steel construction except adaptor 41-366 which features nickel plated carbon steel construction.

Ultra-High Pressure up to 2800 bar



2-Way Shut-Off Valve Model Nr. 72-750

For 2800 bar applications requiring a shut-off valve or gauge snubber.

Made of 318 Stainless Steel and utilizing .38 inch cone fittings, it is the perfect selection for use with your ultra-high pressure hand pump.

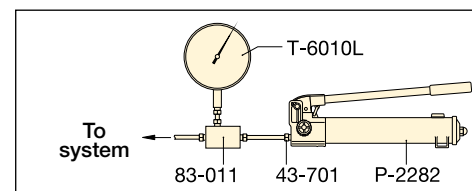


Test System Gauges

Ideal for monitoring pressure in your hydraulic circuit. Test System Gauges, such as the **T6010L**, are available

with cone threads or NPTF threads and a variety of pressure ranges.

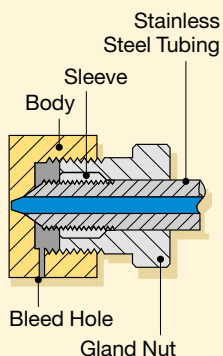
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▲ Typical Test System

Cone Seal

Stainless Steel High Pressure fittings seal on a 'cone' surface and do not require pipe sealer. The Gland Nut holds the sleeve and tubing tight against the cone surface to provide a 2800 bar seal.












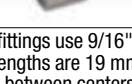



| Pump Type | Usable Oil Capacity (cm ³) | Model Number | Pressure Rating * (bar) | | Oil Displacement per Stroke (cm ³) | | Max. Handle Effort (kg) |
|--------------|---|--------------|----------------------------|-----------------------|---|-----------------------|----------------------------|
| | | | 1 st stage | 2 nd stage | 1 st stage | 2 nd stage | |
| Two-Speed | 983 | P-2282 | 13 | 2800 | 16,22 | 0,61 | 48,1 |
| Single-Speed | 737 | 11-100 | - | 700 | - | 2,49 | 54,4 |
| | 737 | 11-400 | - | 2800 | - | 0,62 | 54,4 |

* Contact Enerpac for applications where operating pressure is less than 10% of operating pressure.

Ultra-High Pressure Hand Pumps

▼ Optional Ultra-High Pressure Fittings and Tubings

| Description | Connection | Model Nr. |
|-----------------------|--|----------------------------|
| 2800 bar | | |
| Gland Nut Plug |  .38" cone | 43-001 |
| Elbow |  .38" cone | 43-200 |
| Tee |  .38" cone | 43-300 |
| Gauge Tee |  .38" cone side/ .25" cone gauge port | 43-301 |
| Gauge Adaptor |  .38" cone side/ .25" cone gauge port | 83-011 |
| Coupling |  .38" cone | 43-400 |
| Cross |  .38" cone | 43-600 |
| Gland Nut with Sleeve |  .38" cone | 43-701 |
| Tubing |  100 mm tube, O.D. .38" * 200 mm tube, O.D. .38" * 300 mm tube, O.D. .38" * | 45-116 45-126 45-136 |
| 700 bar only | | |
| Adaptor |  .38" F cone to 1/4" M NPTF | 41-146 |
| |  .38" F cone to 3/8" M NPTF | 41-166 |
| Adaptor |  .38" F cone to 1/4" F NPTF | 41-246 |
| |  .38" F cone to 3/8" F NPTF | 41-266 |
| Adaptor |  .38" M cone to 3/8" F NPTF | 41-366 |

Note: .25" cone fittings use 9/16"-18 threads, 3/8" cone fittings use 3/4"-16 threads.
* Actual tubing lengths are 19 mm less than nominal size shown. These dimensions make distance between centers of valves and fittings multiples of 100 mm spaces.

P 11 Series



Reservoir Capacity:
737 - 983 cm³

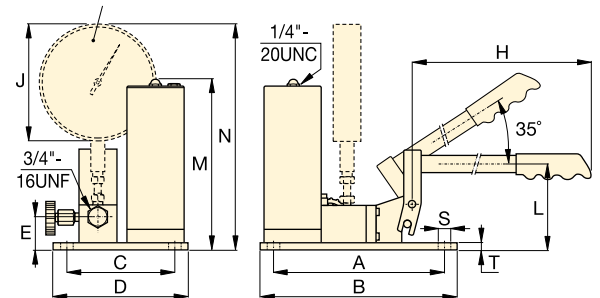
Flow at Rated Pressure:
0,61 - 2,49 cm³/stroke

Maximum Operating Pressure:
700 - 2800 bar

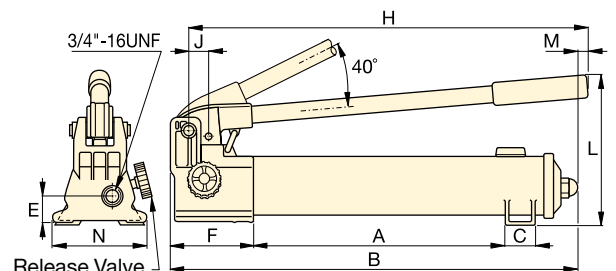


**Ultra-High Pressure pumps
DO NOT have an internal
safety pressure relief valve.**


Optional T-Series gauge and fitting



11-100, 11-400



P-2282

| | Piston Stroke | Dimensions (mm) | | | | | | | | | | | | |  | Model Number |
|--|---------------|-----------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|---|---|---|--------------|
| | | | | | | | | | | | | | | | | |
| | (mm) | A | B | C | D | E | F | H | J | L | M | N | S | T | (kg) | |
| | 25,4 | 344 | 558 | 35 | – | 31 | 133 | 527 | 29 | 228 | 7 | 120 | – | – | 6,4 | P-2282 |
| | 19,8 | 240 | 266 | 151 | 177 | 45 | – | 635 | 162 | 114 | 237 | 314 | 7 | 9 | 10,0 | 11-100 |
| | 19.8 | 240 | 266 | 151 | 177 | 45 | – | 635 | 162 | 114 | 237 | 314 | 7 | 9 | 10.0 | 11-400 |

▼ Shown: XC-1201ME



- Lightweight design with integrated handle and carrying strap for portability
- Bladder reservoir prevents contamination and allows pump usage in any position
- Powerful 0,37 kW motor and 28 Volt Lithium-Ion battery deliver exceptional speed and run time
- High-strength fiberglass reinforced composite shroud for superior durability in demanding job site environments
- Cordless technology eliminates tripping hazards found in other powered pumps.



Performance of a Powered Pump Portability of a Hand Pump



G2535L Gauge

Use gauge to check system pressure. Use gauge adaptor **GA-3** for easy mounting.

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Battery packs contain no cadmium, so they are environmentally friendly. Enerpac encourages recycling.



28-Volt Battery

The **XC-28V** with Lithium-Ion technology for maximum battery performance.



Battery Charger

1-hour quick charger.

| Model Nr. | Voltage |
|-----------------|---------|
| XC-115VC | 115 VAC |
| XC-230VC | 230 VAC |



3/8" Swivel Connector

360 degree swivel coupler for optimal orientation of the hydraulic connection on cylinders, pumps and hoses. Order Model Nr. **XSC-1**.

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◀ Power and simplicity for the toughest jobs.

Cordless Hydraulic Pumps



XC-Series Cordless Hydraulic Pumps

The XC-Series cordless pump is ideal for jobs using small to medium size cylinders and hydraulic tools, and is compatible with over 140 Enerpac tools and cylinders.

These cordless pumps combine the performance of a powered pump with the portability of a hand pump making them a perfect solution for remote applications with limited or no access to a power supply or for locations where corded solutions present trip hazards.

The Lithium-Ion battery provides superior run time:

- 250 cuts of 10 mm reinforcing bar using a WHC-750 cutter
- >100 lifts with a WR-5 spreader up to maximum load
- 45 splits on M27 - 8.8 nuts using a NC-3241 nut cutter
- 30 times lifting with a RC-104 cylinder (10 ton, 100 mm stroke).

Note: Actual number of cycles per charge will vary depending on condition of battery, tool and ambient conditions.

The XC-Series cordless pump is CSA and CE compliant.



XC Series



Reservoir Capacity:

1,0 - 2,0 litres

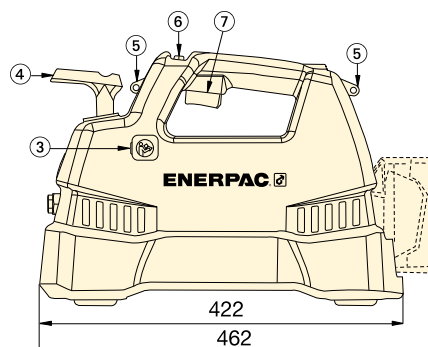
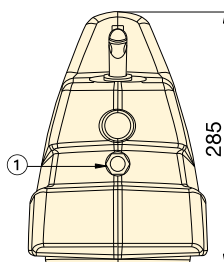
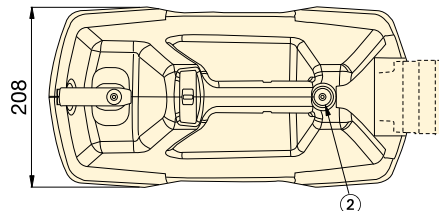
Flow at Rated Pressure:

0,25 l/min

Maximum Operating Pressure:

700 bar

- ① Outlet "Advance" Port 3/8"-18 NPTF
- ② Oil Fill (must use funnel)
- ③ User Adjustable Relief Valve Access Port
- ④ Directional Control Valve
- ⑤ Shoulder Strap Connection Points
- ⑥ Safety Lock Feature
- ⑦ On/Off Switch



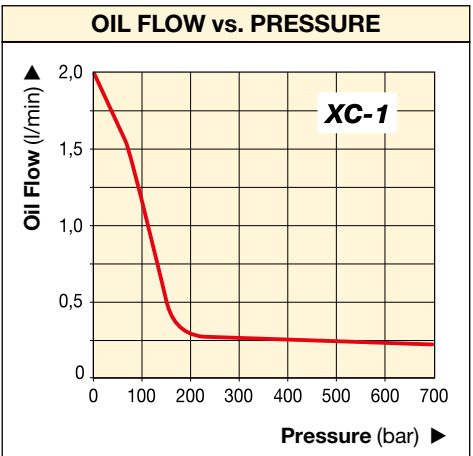
▼ SELECTION CHART

| Useable Oil Capacity (litres) | Model Number | Output Flow Rate (l/min) | | | Valve Function ** | Charger Voltage (VAC) | Weight (kg) |
|----------------------------------|--------------------|-----------------------------|---------|---------|-------------------|--------------------------|----------------|
| | | No Load | 140 bar | 700 bar | | | |
| 1,0 | XC-1201MB | 2,0 | 0,50 | 0,25 | 3-way, 2-pos. | 115 | 10 |
| 2,0 | XC-1202MB | 2,0 | 0,50 | 0,25 | 3-way, 2-pos. | 115 | 11 |
| 1,0 | XC-1201ME * | 2,0 | 0,50 | 0,25 | 3-way, 2-pos. | 230 | 10 |
| 2,0 | XC-1202ME * | 2,0 | 0,50 | 0,25 | 3-way, 2-pos. | 230 | 11 |

* Batteries and charger not included.

** For use with single-acting cylinders or tools.

www.enerpac.com



▼ Take the battery pump anywhere without power cords or air hoses.



▼ Shown: PUJ-1200E



- Lightweight and compact design: 11,8 to 18,6 kg
- Large easy-carry handle for maximum portability
- Two-speed operation reduces cycle times for improved productivity
- 230 VAC 50/60-cycle universal motor will operate under poor voltage supply
- 24 VAC remote motor control, 3 m length for operator safety
- Starts under full load
- High strength molded shroud, with integral handle, protects motor from contamination and damage.

Heavy on Performance, Light on Weight



Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. For use with the Economy pump the **G-2535L** gauge and **GA-3** gauge adaptor are suggested.

For a full range of gauges, please refer to the System Components section.

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Hoses

Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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| Pump Type (Used with cylinder) | Usable Oil Capacity (litres) | Model Number * | Pressure Rating (bar) | |
|---------------------------------------|-------------------------------------|----------------|-----------------------|-----------------------|
| | | | 1 st stage | 2 nd stage |
| Single-Acting | 1,9 | PUD-1100E | 13 | 700 |
| | 3,8 | PUD-1101E | 13 | 700 |
| | 1,9 | PUJ-1200E | 13 | 700 |
| | 3,8 | PUJ-1201E | 13 | 700 |
| | 1,9 | PUD-1300E | 13 | 700 |
| | 3,8 | PUD-1301E | 13 | 700 |
| Double-Acting | 1,9 | PUJ-1400E | 13 | 700 |
| | 3,8 | PUJ-1401E | 13 | 700 |

* For 115 volt applications replace 'E' suffix with 'B'.

** Electric dump valve for auto-retract of cylinders.

Economy Electric Pumps



About the Economy Pump

The Economy pump is best suited to power small to medium size cylinders or hydraulic tools. Its lightweight and compact design make it ideal for applications which require easy transport of the pump. The universal motor works well on long extension cords or generator-driven electrical power supplies.

For further application assistance refer to the 'Yellow Pages'.

PUD-1100 Series

- Provides advance-retract of single-acting cylinders
- Ideal for punching applications
- For applications not requiring load holding
- 3 m pendant controls motor and valve operation.

PUD-1300 Series

- Provides advance-hold-retract of single-acting cylinders
- Ideal for applications requiring load-holding
- For applications requiring remote valve operations
- 3 m pendant controls motor and valve operation.

PUJ Series

- Manual valves provide advance-hold-retract tool operation
- Available with 3- and 4-way valves for single or double-acting cylinders
- 3 m pendant controls the motor operation.



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PU Series



Reservoir Capacity:

1,9 - 3,8 litres

Flow at Rated Pressure:

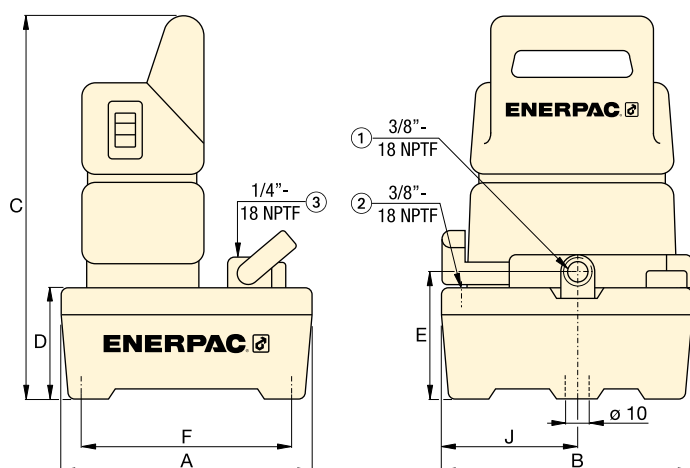
0,32 l/min

Motor Size:

0,37 kW

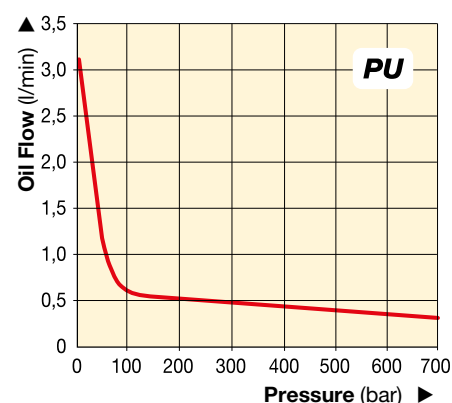
Maximum Operating Pressure:


700 bar



- ① Oil Outlet Port
- ② Tank Port
- ③ Gauge Port (PUJ-1200 and PUJ-1201 models only)

OIL FLOW VERSUS PRESSURE



| | Output Flow Rate (l/min) | | Valve Type | Valve Function | Current Draw | Motor Voltage | Sound Level | Dimensions (mm) | | | | | | |  | Model Number * |
|--|--------------------------|-----------------------|--------------|-----------------------|--------------|---------------|-------------|-----------------|-----|-----|-----|-----|-----|-----|---|----------------|
| | 1 st stage | 2 nd stage | | | | | | | | | | | | | | |
| | 3,31 | 0,32 | Dump** | Advance/Retract | 3,2 | 230 | 85 | 244 | 244 | 362 | 101 | 119 | 203 | 133 | 11,8 | PUD-1100E |
| | 3,31 | 0,32 | | | | | 3,2 | 230 | 85 | 368 | 309 | 373 | 105 | 130 | 323 | 142 |
| | 3,31 | 0,32 | 3/2 manual | Advance/ Hold/Retract | 3,2 | 230 | 85 | 244 | 244 | 362 | 101 | 119 | 203 | 133 | 10,0 | PUJ-1200E |
| | 3,31 | 0,32 | | | | | 3,2 | 230 | 85 | 368 | 309 | 373 | 105 | 130 | 323 | 142 |
| | 3,31 | 0,32 | 3/2 solenoid | Advance/ Hold/Retract | 3,2 | 230 | 85 | 244 | 244 | 362 | 101 | 119 | 203 | 133 | 12,0 | PUD-1300E |
| | 3,31 | 0,32 | | | | | 3,2 | 230 | 85 | 368 | 309 | 373 | 105 | 130 | 323 | 142 |
| | 3,31 | 0,32 | 4/3 manual | Advance/ Hold/Retract | 3,2 | 230 | 85 | 244 | 244 | 362 | 101 | 119 | 203 | 133 | 13,2 | PUJ-1400E |
| | 3,31 | 0,32 | | | | | 3,2 | 230 | 85 | 368 | 309 | 373 | 105 | 130 | 323 | 142 |

▼ Shown: PEJ-1401E



- Two-speed operation reduces cycle times for improved productivity
- Powerful 0,37 kW induction motor is submerged in the oil reservoir to run cooler, protect the motor, simplify the pump interface, save space and reduce noise
- Large 5,5 litres reservoir allows operation of a wide range of cylinders
- 24 VDC remote pendant control on certain models for safer operation
- Externally adjustable relief valve allows control of operating pressure without opening the pump
- 40-micron internal return line filter keeps oil clean, promoting longer pump life
- Full length side tube for easy monitoring of oil level.

Best Performance for Mid-Range Cylinders and Tools

▼ SELECTION CHART

For more technical information see next page.

5 BASIC PUMP TYPES

Select the model that suits your application. For special requirements see page 79 or contact your Enerpac office.

PED Series: with Dump Valve

- Ideal for punching, crimping and cutting
- For use when load holding is not required
- Control pendant with 3 m cord controls valve and motor

PEM Series: with Manual Valve

- Ideal choice for most applications
- Manual valve control, for both single-acting and double-acting applications
- Manual motor control

PER Series: with Solenoid Valve

- Ideal for production and lifting
- All valves are 3 position for Advance-Hold-Retract
- Control pendant with 3 m cord for remote valve operation

PEJ Series: with Remote Jog

- For light production and lifting applications
- Manual valve control for single-acting or double-acting cylinders
- Control pendant with 3 m cord for remote motor operation

PES Series: with Pressure Switch

- Designed for continuous pressure applications, such as clamping, workholding and testing
- All versions include manual valves for directional control

* See the Valve Section in this catalog for technical information on valve types.

Submerged Electric Pumps



PE-Series Submerged Pump Application

The Submerged pump is best suited to power small to medium size cylinders or hydraulic tools, or whenever quiet, intermittent duty cycle is needed.

With its low sound level and the addition of the optional oil cooler, the Submerged pump is suited to light production work as well.

Its lightweight and compact design also make it ideal for applications which require some transport of the pump.

For further application assistance see the 'Yellow Pages' or contact your local Enerpac office.

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PE Series



Reservoir Capacity:

5,5 litres

Flow at Rated Pressure:


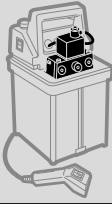

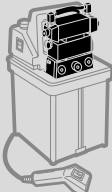
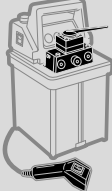

0,27 l/min

Motor Size:

0,37 kW

Maximum Operating Pressure:

700 bar

| Pump Type | Used with Cylinder | Valve Function | Valve Type * | Usable Oil Capacity (litres) | Model Number 230 VAC, 1 ph |  (kg) |
|---|--------------------|----------------------|-----------------------------|---------------------------------|-------------------------------|---|
|  | Single-Acting | Advance/Retract | Dump | 5,5 | PED-1101E | 24,9 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
|  | Single-Acting | Advance/Retract | Manual, 3-way, 2-position | 5,5 | PEM-1201E | 24,0 |
| | Single-Acting | Advance/Hold/Retract | Manual, 3-way, 3-position | 5,5 | PEM-1301E | 24,0 |
| | Double-Acting | Advance/Hold/Retract | Manual, 4-way, 3-position | 5,5 | PEM-1401E | 24,0 |
| | | | | | | |
| | | | | | | |
|  | Single-Acting | Advance/Hold/Retract | Solenoid, 3-way, 3-position | 5,5 | PER-1301E | 29,5 |
| | Double-Acting | Advance/Hold/Retract | Solenoid, 4-way, 3-position | 5,5 | PER-1401E | 29,5 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
|  | Single-Acting | Advance/Retract | Manual, 3-way, 2-position | 5,5 | PEJ-1201E | 24,9 |
| | Single-Acting | Advance/Hold/Retract | Manual, 3-way, 3-position | 5,5 | PEJ-1301E | 24,9 |
| | Double-Acting | Advance/Hold/Retract | Manual, 4-way, 3-position | 5,5 | PEJ-1401E | 24,9 |
| | | | | | | |
| | | | | | | |
|  | Single-Acting | Advance/Retract | Manual, 3-way, 2-position | 5,5 | PES-1201E | 28,1 |
| | Double-Acting | Advance/Hold/Retract | Manual, 4-way, 3-position | 5,5 | PES-1401E | 28,1 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

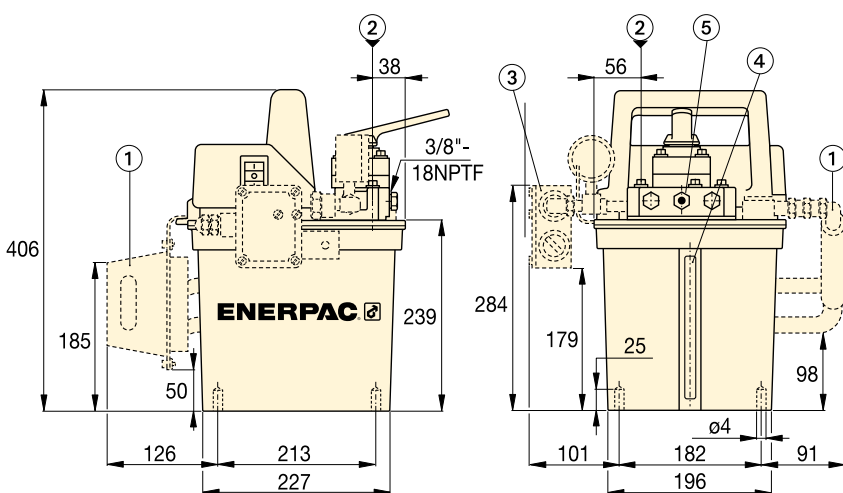
PE-Series, Submerged Electric Pumps

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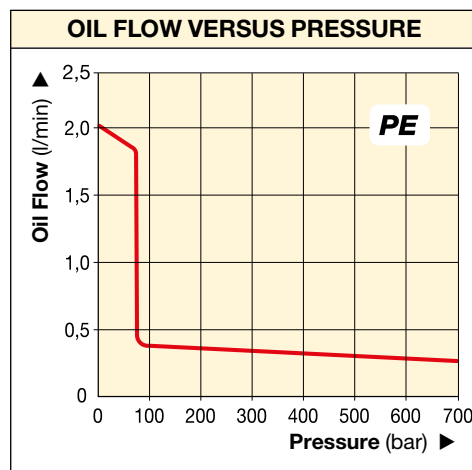
◀ For full features see previous page.

| SUBMERGED PUMP PERFORMANCE | | | | | | | |
|----------------------------|--------------------------|-----------------------|---|-----------------------|--|----------------------|--|
| Motor Size (kW) | Pressure Rating (bar) | | Output Flow Rate at 50 Hz (l/min) | | Motor Electrical Specifications * | Sound Level (dBA) | Relief Valve Adjustment Range (bar) |
| | 1 st stage | 2 nd stage | 1 st stage | 2 nd stage | | | |
| 0,37 | 70 | 700 | 2,0 | 0,27 | 13 @ 115-1-50/60 6,75 @ 230-1-50/60 | 62-70 | 70-700 |

* At full load. See ordering matrix footnote for frequency notations.



- ① Heat Exchanger (optional for all models)
- ② Fill Port
- ③ Pressure Switch (PES-series, optional for other models)
- ④ Oil Level Indicator
- ⑤ Adjustable relief valve



Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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Submerged Electric Pumps

CUSTOM BUILD YOUR SUBMERGED PUMP

If the Submerged Pump that would best fit your application cannot be found in the chart on page 77, here you can easily build your custom submerged pump.

▼ This is how a Submerged Pump Model Number is built up:

| 1 | 2 | 3 | | 4 | 5 | 6 | 7 |
|--------------|------------|-----------|----------|-------------|------------|----------------|---------------|
| P | E | M | - | 1 | 3 | 01 | E |
| Product Type | Motor Type | Pump Type | | Pump Series | Valve Type | Reservoir Size | Motor Voltage |

1 Product Type

P = Pump

2 Motor Type

E = Electric Motor

3 Pump Type

D = Dump

J = Jog

M = Manual

R = Remote (Solenoid) ^{1) 2)}

S = Pressure Switch

4 Pump Series

1 = 0,37 kW, 700 bar

5 Valve Type

0 = No valve (PER only)

1 = Dump

2 = 3-way, 2-position, normally open

3 = 3-way, 3-position, tandem center

4 = 4-way, 3-position, tandem center

5 = Modular solenoid valve (PER only)

6 Reservoir Capacity

01 = 5,5 litres

7 Motor Voltage and Heat Exchanger

B = 115 V, 1 Ph, 50/60 Hz ¹⁾

D = 115 V, 1 Ph, 50/60 Hz ¹⁾
with Heat Exchanger

E = 230 V, 1 Ph, 50/60 Hz ²⁾

F = 230 V, 1 Ph, 50/60 Hz ²⁾
with Heat Exchanger

I = 230 V, 1 Ph, 60 Hz

¹⁾ Solenoid valves operate only at 60 Hz. Can run on 50 Hz with manual valves.

²⁾ Solenoid valves operate only at 50 Hz. Can run on 60 Hz with manual valves.

Ordering Example

Model Number: PER-1301E

The PER-1301E is a 0,37 kW, 700 bar, submerged electric pump, with 5,5 litres usable oil capacity, a 3-way, 3-position, remote solenoid valve and a 230 V, 1 Phase, 50/60 Hz motor.

PE Series



Reservoir Capacity:

5,5 litres

Flow at Rated Pressure:

0,27 l/min

Motor Size:

0,37 kW

Maximum Operating Pressure:

700 bar



Hoses

Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

Page: **116**



Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the System Components section for a full range of gauges.

Page: **124**

Z-Class Enerpac Power Pumps

ENERPAC 
POWERFUL SOLUTIONS. GLOBAL FORCE.

Introducing the **Z-Class** power pumps from Enerpac – pumps that run cooler, use less electricity and are easy to service.

Enerpac has used the latest metallurgical, bearing and seal technologies to produce a pump whose features and benefits far surpass the electric pumps that are available today. By reducing the number of moving parts, improving flow dynamics and decreasing friction, Z-Class pumps will stay on the job longer, require less energy to operate and when needed, have lower service costs.



Z-Class power pumps from Enerpac – simply the best pump you will ever use.

Z Tough.
Dependable.
Innovative.
CLASS



Z-Class, An Innovation in Pump Design

Z-Class Pumping Element – The Heart of Your Hydraulic System

Highly efficient design provides increased flow rates, reduced heat generation and a decrease in power consumption. This means improved tool speed and increased service life – which results in higher productivity and lower operating costs.

Heavy-duty bearings extend pump life by reducing friction, reducing surface-loading and lowering bearing stresses.

Pump cavity oil bath extends pump life by reducing heat, improving lubrication and reducing wear.

Self-priming, high-flow 1st stage pump increases pump performance by super-charging the 2nd stage piston pump – improving oil flow in both hot and cold weather operation.

Balanced rotating components reduce vibration creating a smoother running pump – reducing wear, friction and sound levels.

Replaceable piston check-valves increase service life of major pump components.

Ergonomic low-voltage pendant features sealed switches and operates at 15 V for improved operator safety.

Z-Class factory options & accessories

Extensive list of accessories including heat exchanger, roll cage, skid bar, pressure transducer, return line filter and level and temperature switches, allow complete pump control over a wide range of industrial applications.

Z-Class power pumps for your application

Available in one flow range for universal motor and eight flow ranges for induction motor. Choose from single or two-stage models to provide the optimum cylinder and tool performance for almost any industrial application.

Back-lit LCD on select Z-Class pumps

- pump usage information, hour and cycle counts
- low-voltage warning and recording
- offers self-test and diagnostic capabilities
- information displayed in 6 languages
- pressure read-out (when used with the optional pressure transducer)
- adjustable trigger pressure setting (when used with the optional pressure transducer).



Back-lit LCD available on ZU and ZE-Series Electric Pumps. ►



ZU-Series Pump Applications

- **Mobile:** when frequent pump transport is required and/or on remote locations
- **Universal motor:** 1-phase, runs well under poor voltage supply, using generator power supply or using long extension cord
- **Duty-cycle:** for intermittent applications
- **Cylinders and tools:** for medium to large size single and double-acting applications and high speed
- **Pump speed:** two stage pump unit.



ZE-Series Pump Applications

- **Stationary:** when pump remains in one location
- **Induction motor:** 1 and 3-phase for high cycle usage
- **Duty-cycle:** for heavy-duty, extended cycle application
- **Cylinders and tools:** for medium to large size single and double-acting applications and high speed
- **Pump speed:** single or two stage pump unit.

| Oil Flow Rate at 700 bar (l/min) | Z-Class Pump Series * | Electric Motor Power (kW) | Air Motor-Consumption (l/min) | Gasoline Engine Power (kW) | Page: |
|-------------------------------------|-----------------------|------------------------------|----------------------------------|-------------------------------|----------|
| 0,55 | ZE3 | 0,75 | – | – | 88 |
| 0,82 | ZE4(T) | 1,12 | – | – | 88, 208 |
| 1,00 | ZU4(T) | 1,25 | – | – | 82, 204 |
| 1,30 | ZA4(T) | – | 2840 | – | 102, 212 |
| 1,60 | ZG5 | – | – | 4,8 | 104 |
| 1,64 | ZE5(T) | 2,24 | – | – | 88, 208 |
| 2,73 | ZE6 | 5,60 | – | – | 88 |
| 3,30 | ZG6 | – | – | 9,7 | 106 |

* ZA4T, ZU4T, ZE4T and ZE5T-Series are Torque Wrench Pumps.

ZU4-Series, Portable Electric Pumps

ENERPAC 
POWERFUL SOLUTIONS. GLOBAL FORCE.

▼ Shown from left to right: ZU4304ME, ZU4420SE-H, ZU4304PE-K



- High-efficiency two-speed pump design – higher oil flow and bypass pressure
- Powerful 1,25 kW universal electric motor provides high power-to-weight ratio and excellent low-voltage operating characteristics
- High-strength, moulded composite shroud protects motor and electronics, while providing an ergonomic, non-conductive handle for easy transport.

Pro-Series models only

- * Back-lit LCD readout provides pressure display and a number of diagnostics and readout capabilities never offered on a portable pump before
 - pump usage information, hour and cycle counts
 - self-test, diagnostic and read-out capabilities
 - pressure readout and auto-mode pressure settings.

Z Tough.
Dependable.
Innovative.
CLASS



ZU4-Series Features and Options

For special requirements see factory installed features and options.

Page: 84

▼ COMMON PUMP MODELS

For technical information and other options see next page.

BASIC PUMP TYPES

Select the model that suits your application. For special requirements contact your Enerpac office.

Manual Valve

- Ideal choice for most applications.
- Manual valve control, for single-acting or double-acting applications.
- Motor control on shroud.

Manual Valve with Pendant *

- For light production and lifting applications.
- Manual valve for single- or double-acting cylinders.
- Manual valve with power seat (VM43LPS), ideal for post-tensioning applications.

Dump Valve *

- Ideal for punching, crimping and cutting.
- For use when load-holding is not required.

Solenoid Valve *

- Ideal for lifting applications and where remote control is required.
- With VE32 valve, motor only runs during the advance function, while holding and retracting, the motor is off.
- Motor runs continuously on pumps with VE33 and VE43 valves.

* Low-voltage control pendant with 3 m. cord controls valve and motor.

ZU4-Series, Electric Pumps



Z-Class – A Pump For Every Application

Patented Z-Class pump technology provides high by-pass pressures for increased productivity – important in applications using long hose runs and high pressure-drop circuits, like heavy lifting or certain double-acting tools.

Enerpac ZU4-Series Pumps are built to power small to large-sized cylinders or hydraulic tools, or wherever high-speed, intermittent duty, remote hydraulic power is needed.

Classic Electric Pump

- The Classic has traditional electro-mechanical components (transformers, relays and switches) in place of solid-state electronics.

The Classic delivers durable, safe and efficient hydraulic power for demanding markets like construction, post-tensioning and foundation repair.

Standard Electric Pump

- For applications that do not require digital display features of the Premium Pump. Available in all manual or jog versions.

Pro Electric Pump

- Digital (LCD) display features a built-in hour meter and shows self-diagnostic, cycle-count and low voltage warning information.

Pressure can also be displayed when the pump is equipped with an optional pressure transducer.



ZU4 Series



Reservoir Capacity:

4 - 40 litres

Flow at Rated Pressure:

1,0 l/min

Motor Size:

1,25 kW

Maximum Operating Pressure:

700 bar

| Pump type | Used with Cylinder | | Valve Funktion | | | Valve Type ¹⁾ | Pump Control | Useable Oil Capacity (litres) | Model Number 230 V - 1 phase - 50 Hz ²⁾ | | | Pro Electric Weight ³⁾ (kg) |
|-----------|--------------------|---|----------------|---|---|--------------------------|---------------|-------------------------------|--|-------------------------|--------------------------|--|
| | | | | | | | | | Classic Electric | Standard (STD) Electric | Pro Electric (incl. LCD) | |
| | ● | | ● | | ● | VM32 | Manual | 4,0 | ZU4204RE | ZU4204ME | ZU4204LE | 27 |
| | ● | | ● | | ● | VM32 | Manual | 8,0 | ZU4208RE | ZU4208ME | ZU4208LE | 32 |
| | ● | | ● | ● | ● | VM33 | Manual | 8,0 | ZU4308RE | ZU4308ME | ZU4308LE | 32 |
| | ● | | ● | ● | ● | VM33 | Manual | 20,0 | ZU4320RE | ZU4320ME | ZU4320LE | 50 |
| | | ● | ● | ● | ● | VM43 | Manual | 8,0 | ZU4408RE | ZU4408ME | ZU4408LE | 32 |
| | | ● | ● | ● | ● | VM43 | Manual | 20,0 | ZU4420RE | ZU4420ME | ZU4420LE | 50 |
| | ● | | ● | | ● | VM32 | Remote (Man.) | 4,0 | ZU4204PE | ZU4204JE | ZU4204KE | 27 |
| | ● | | ● | | ● | VM32 | Remote (Man.) | 8,0 | ZU4208PE | ZU4208JE | ZU4208KE | 32 |
| | ● | | ● | | ● | VM32 | Remote (Man.) | 20,0 | ZU4220PE | ZU4220JE | ZU4220KE | 50 |
| | ● | | ● | ● | ● | VM33 | Remote (Man.) | 8,0 | ZU4308PE | ZU4308JE | ZU4308KE | 32 |
| | | ● | ● | ● | ● | VM43 | Remote (Man.) | 8,0 | ZU4408PE | ZU4408JE | ZU4408KE | 32 |
| | | ● | ● | ● | ● | VM43 | Remote (Man.) | 20,0 | ZU4420PE | ZU4420JE | ZU4420KE | 50 |
| | ● | | ● | | ● | VE32D | Remote | 4,0 | N/A | N/A | ZU4104DE | 29 |
| | ● | | ● | | ● | VE32D | Remote | 8,0 | N/A | N/A | ZU4108DE | 33 |
| | ● | | ● | | ● | VE32D | Remote | 20,0 | N/A | N/A | ZU4120DE | 51 |
| | | | | | | – | – | – | – | – | – | – |
| | | | | | | – | – | – | – | – | – | – |
| | | | | | | – | – | – | – | – | – | – |
| | ● | | ● | | ● | VE32 | Remote | 4,0 | N/A | N/A | ZU4204SE | 29 |
| | ● | | ● | | ● | VE32 | Remote | 8,0 | N/A | N/A | ZU4208SE | 33 |
| | ● | | ● | ● | ● | VE33 | Remote | 8,0 | N/A | N/A | ZU4308SE | 39 |
| | | ● | ● | ● | ● | VE43 | Remote | 8,0 | N/A | N/A | ZU4408SE | 39 |
| | | ● | ● | ● | ● | VE43 | Remote | 20,0 | N/A | N/A | ZU4420SE | 56 |
| | | | | | | – | – | – | – | – | – | – |
| | | | | | | – | – | – | – | – | – | – |
| | | | | | | – | – | – | – | – | – | – |

¹⁾ See valves section for technical information on valve types. ²⁾ See custom order matrix on page 87 for other voltage options.

³⁾ Subtract 1,4 kg for Standard (STD) Electric models.

ZU4-Series, Options & Accessories



Pressure Transducer *

- More durable than analog gauges (against mechanical and hydraulic shock)
- More accurate than analog gauges (0,5% full scale of pump)
- Calibration can be fine tuned for certification
- "Set pressure" feature turns off motor at user defined pressure (or shifts valve to neutral on models with VE33/VE43 valves)
- Display pressure in bar, psi or MPa.

* Requires LCD Electric


| Accessory Kit Model Number | Adjustable Pressure Range (bar) | Switch-point repeatability | Dead-band (bar) |
|----------------------------|---------------------------------|----------------------------|-----------------|
| ZPT-U4 * | 3,5 - 700 | ± 0,5% | 3,5 |

* Add suffix **T** for factory installation.



Level/Temperature Switch

- Ensures feedback on pump oil level and temperature
- Drop-in design allows for easy installation to pump reservoir
- Plugs directly into pump electrical enclosure
- Built-in thermal sensing shuts off pump when unsafe operating temperature is reached
- Oil level switch shuts down pump before oil reaches an unsafe operating level.

| Model Number | Operating Temperature (°C) | Maximum Pressure (bar) |  (kg) |
|--------------|----------------------------|------------------------|--|
| ZLS-U4 * | 5-110 | 10 | 0,1 |

* Add suffix **L** for factory installation.



Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

Page: 116



Gauges

Minimize the risk of over-loading and ensure long, dependable service from your equipment. Refer to the System Components section for a full range of gauges.

Page: 124



Foot Switch

- Hands-free remote control on solenoid dump and 3-position valves
- With 3 metres cord.

| Accessory Kit ModelNr. | Can be used on ZU4-Series Pumps with |
|------------------------|--------------------------------------|
| ZCF-2 * | Solenoid VE-Series valves |

* Add suffix **U** for factory installation.



Roll Cage

- Protects pump
- Provides greater pump stability.

| Accessory Kit ModelNr. | Fits on reservoir |
|------------------------|------------------------------|
| ZRC-04 * | 4 and 8 litres ¹⁾ |
| ZRC-04H * | 4 and 8 litres ²⁾ |
| ZRB-10 * | 10 litres |
| ZRB-20 * | 20 litres |
| ZRB-40 * | 40 litres |

* Add suffix **R** for factory installation.


¹⁾ Without heat exchanger

²⁾ With heat exchanger.



Skid Bar

- Provides easy two-hand lift
- Provides greater pump stability on soft or uneven surfaces.

| Access-ory Kit ModelNr. | Fits on reservoir |  (kg) |
|-------------------------|----------------------------------|--|
| SBZ-4 * | 4 and 8 l without heat exchanger | 2,2 |
| SBZ-4L * | 4 and 8 l with heat exchanger | 3,2 |

* Add suffix **K** for factory installation.

ZU4-Series, Options & Accessories



ZU4-Series Options

Accessory Kits can be installed by the customer.

See chart below for all possible options on ZU4-Series pumps:

- Classic Electric,
 - Standard (STD) Electric (no LCD)
 - Pro Electric (with LCD).
- Refer to page 87 for ordering matrix.

| ZU4-Series Options | Factory Installed | | | Accessory Kits | | |
|--------------------------|-------------------|-------------------|--------------|------------------|-------------------|--------------|
| | Classic Electric | Standard Electric | Pro Electric | Classic Electric | Standard Electric | Pro Electric |
| Return Line Filter | F | F | F | ZPF | ZPF | ZPF |
| Skid Bar ¹⁾ | K | K | K | SBZ | SBZ | SBZ |
| Roll Cage | R | R | R | ZRC | ZRC | ZRC |
| Heat Exchanger | H | H | H | ZHE | ZHE | ZHE |
| 1000 bar Pressure Gauge | G | G | G | G | G | G |
| Pressure Transducer | – | – | T | – | – | ZPT-U4 |
| Level/Temperature Switch | – | – | L | – | – | ZLS-U4 |
| Foot Switch | – | – | U | – | – | ZCF-2 |
| | | | | | | |
| | | | | | | |

¹⁾ Skid Bar not in combination with Roll Cage.

ZU4 Series



Reservoir Capacity:

4 - 40 litres

Flow at Rated Pressure:

1,0 l/min

Motor Size:

1,25 kW

Maximum Operating Pressure:

700 bar



25 Micron Return Line Filter

- Removes contaminants from return oil flow
- By-pass valve prevents damage if filter is dirty
- With maintenance indicator.

| Accessory Kit Modelnr. | Maximum Pressure (bar) | Maximum Oil Flow (l/min) | By-pass Setting (bar) |
|------------------------|------------------------|--------------------------|-----------------------|
| ZPF * | 13,8 | 45,4 | 1,7 |

* Add suffix **F** for factory installation.



Heat Exchanger

- Removes heat from by-pass oil to provide cooler operation
- Stabilizes oil viscosity, increasing oil life and reduces wear of pump and other hydraulic components.

| Accessory Kit Nr. | Can be used on | (kg) |
|-------------------|----------------|------|
| ZHE-U115 * | 115 V pumps | 4,1 |
| ZHE-U230 * | 230 V pumps | 4,1 |

* Add suffix **H** for factory installation.



Heat Exchanger

Can be factory installed on ZU4-Series Classic, Standard Electric and Pro Electric models.

- Extends system life.
- Stabilizes oil temperature at a maximum of 54 °C at 21 °C ambient temperature.

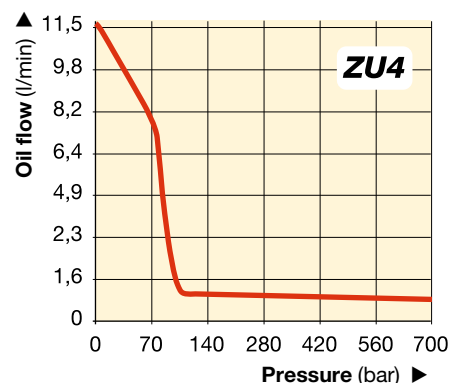
Do not exceed maximum oil flow and pressure ratings. Heat exchanger is not suitable for water-glycol or high water based fluids.

| Thermal Transfer * | | Maximum Pressure | Maximum Oil Flow | Voltage |
|--------------------|--------|------------------|------------------|---------|
| Btu/h | kJoule | (bar) | (l/min) | (VDC) |
| 900 | 950 | 20,7 | 26,5 | 12 |

* At 1,9 l/min at 21 °C ambient temperature.

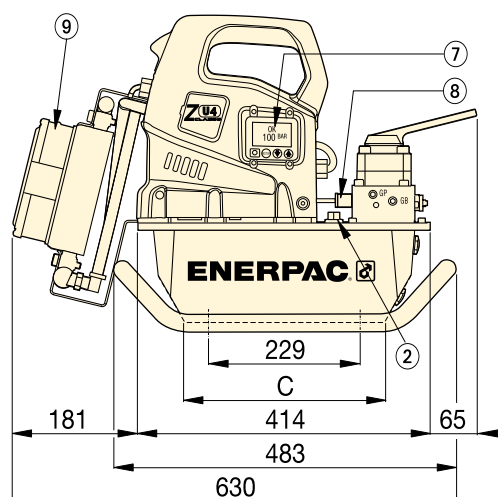
ZU4, Specifications and Dimensions

OIL FLOW VERSUS PRESSURE

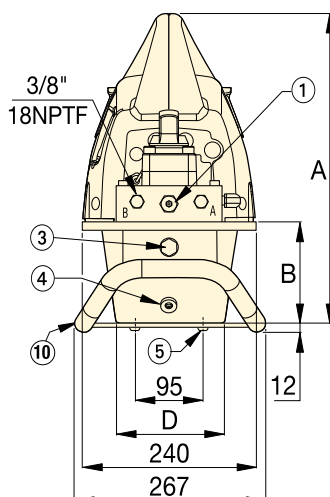


ZU4-SERIES PERFORMANCE CHART

| Motor Size (kW) | Output Flow Rate at 50 Hz (l/min) | | | | Motor Electrical Specifications (Volts-Ph-Hz) | Sound Level (dBA) | Relief Valve Adjustment Range (bar) |
|--------------------|---|--------|---------|---------|---|-------------------------|--|
| | 7 bar | 50 bar | 350 bar | 700 bar | | | |
| 1,25 | 11,5 | 8,8 | 1,2 | 1,0 | 115-1-50/60 230-1-50/60 | 85-90 | 140-700 |



ZU4-Series with 4 and 8 litres reservoirs

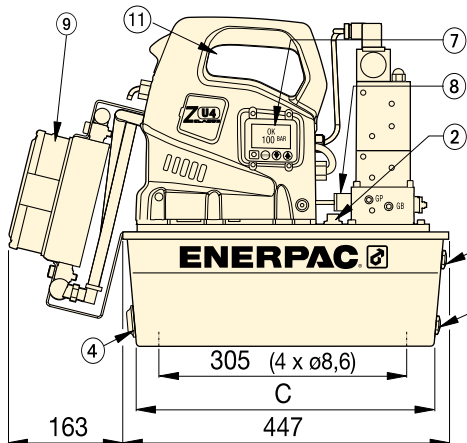


3/8"-18 NPTF Advance and Retract Ports

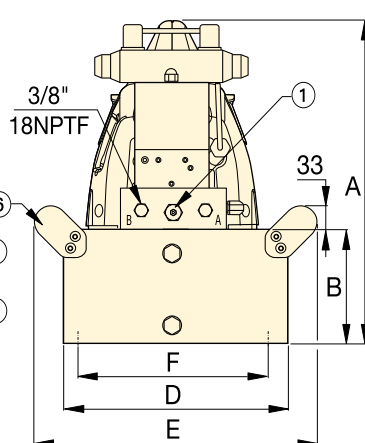
- ① User adjustable relief valve
- ② Oil fill port SAE #10 7/8"-14 UNF-2B
- ③ Oil level sight gauge
- ④ Oil drain 1/2" NPTF
- ⑤ M8, 6 mm deep
- ⑥ Handles on all 10, 20 and 40 litres reservoirs.

Options (see chart on page 85):

- ⑦ Back-lit LCD Electric
- ⑧ Pressure transducer
- ⑨ Heat Exchanger
- ⑩ Skid Bar
- Fits 4 and 8 litres reservoirs
- ⑪ Handle guard installed on all 10, 20 and 40 litres reservoirs
- ⑫ Reservoir handles (not shown) included on all 10, 20 and 40 litres reservoirs.



ZU4-Series with 10, 20 and 40 litres reservoirs
(left view shown without side handle)



Pump Dimensions (mm)

| Usable Reservoir Capacity (litres) | A | B | C | D | E | F |
|------------------------------------|-----|-----|-----|-----|-----|-----|
| 4,0 | 424 | 142 | 279 | 152 | - | - |
| 8,0 | 424 | 142 | 279 | 206 | - | - |
| 10,0 | 439 | 157 | 413 | 305 | 384 | 279 |
| 20,0 | 465 | 180 | 413 | 422 | 500 | 396 |
| 40,0 | 551 | 269 | 399 | 503 | 576 | 480 |

ZU4-Series, Pump Ordering Matrix

CUSTOM BUILD YOUR ZU4-SERIES PUMP

If the ZU4-Series pump that would best fit your application cannot be found in the chart on page 83, you can easily build your custom ZU4-Series pump here.

▼ This is how a ZU4-Series pump model number is built up:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--------------|------------|------------|------------|----------------|-----------------|----------|-------------------------|
| Z | U | 4 | 1 | 04 | D | E | - H K T |
| Product Type | Motor Type | Flow Group | Valve Type | Reservoir Size | Valve Operation | Voltage | Options and Accessories |

1 Product Type

Z = Pump Series

2 Motor Type

U = Universal electric motor

3 Flow Group

4 = 1,0 l/min @ 700 bar

4 Valve Type (see page 110-111 for more details)

- 1** = Dump (VE32D)
- 2** = 3 way/2 position manual or electric (VM32 or VE32)
- 3** = 3 way/3 position manual or electric (VM33 or VE33)
- 4** = 4 way/3 position manual or electric (VM43 or VE43)
- 6** = 3 way/3 position locking manual w/po check (VM33L)
- 7** = 3 way/2 position manual (VM22)
- 8** = 4 way/3 position locking manual w/po check (VM43L)
- 9** = 4 way/3 position manual w/power seating (VM43-LPS)

5 Reservoir Size (useable capacity)

- 04** = 4 litres
- 08** = 8 litres
- 10** = 10 litres ¹⁾
- 20** = 20 litres ¹⁾
- 40** = 40 litres ¹⁾

¹⁾ reservoir includes side handles.

6 Valve Operation

- D** = Dump (solenoid valve w/pendant and LCD Electric)
- J** = Jog (manual valve w/pendant and Standard Electric (i.e. w/o LCD)
- K** = Jog (manual valve w/pendant and LCD Electric)
- L** = Manual valve w/LCD Electric (w/o pendant)
- P** = Manual valve w/pendant and classic electric (i.e. w/o LCD)
- R** = Manual valve w/Classic electric (i.e. w/o LCD) [w/o pendant]
- M** = Manual valve w/Standard Electric (i.e. w/o LCD) [w/o pendant]
- S** = Solenoid valve w/pendant and LCD Electric

7 Voltage

- B** = 115V, 1 ph, 50/60Hz
- E** = 208-240V, 1 ph, 50/60 Hz (w/European plug and CE EMC compliant)
- I** = 208-240V, 1 ph, 50/60 Hz (w/NEMA 6-15 plug)

8 Options and Accessories (see page 85 for possibilities)

- F** = Filter
- G** = 0-1000 pressure gauge (ø 63,5 mm) ¹⁾
- H** = Heat exchanger
- K** = Skid Bar (4 and 8 litres reservoirs only)
- L** = Level/temperature switch ^{2) 3)}
- N** = No reservoir handles (includes lifting eyes)
- R** = Roll Cage
- T** = Pressure transducer ²⁾
- U** = Foot switch

¹⁾ Pressure gauge not available on pump models with pressure transducer

²⁾ These options require Pro Electric

³⁾ Not available on 4 and 8 litres reservoirs

ZU4 Series



Reservoir Capacity:

4 - 40 litres

Flow at Rated Pressure:

1,0 l/min

Motor Size:

1,25 kW

Maximum Operating Pressure:

700 bar



Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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Ordering Example

Model Number:
ZU4408DE-HKT

ZU4408DE-HKT is a Pro Electric model pump with LCD, 1,0 l/min oil flow at 700 bar, pump with a dump valve, an 8 liter reservoir, operates on 230V, heat exchanger, pressure transducer and skid bar.



Torque Wrench Pumps and Hoses

Enerpac system matched air and electric torque wrench pumps provide control to operate hydraulic torque wrenches.

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ZE-Series, Electric Pumps

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▼ Shown from left to right: ZE3304ME-K, ZE4110DE-FHR











Z Tough.
Dependable.
Innovative.

CLASS
The New Standard for
Industrial Applications



Oil Level Glass

All ZE-Series pumps have an oil sight glass and steel reservoirs. Full sight oil level glass on 10, 20 and 40 litres reservoirs, oil level indicators on 4 and 8 litres reservoirs.

| PUMP CONFIGURATIONS | | Pump Type | Used with Tool or Cylinder | | Valve Function ¹⁾ | | | Valve ¹⁾ Model Number | Useable Oil Capacity (litres) |
|--|--|---|----------------------------|---|---|--|---|----------------------------------|--------------------------------------|
| For options and other model numbers see ordering matrix or contact your Enerpac office. (For Z-Class pumps with air motor see ZA-series pumps on page 102). | | | | |  |  |  | | |
| Page: 93 | | | | | | | | | |
| No valve, without electric box ²⁾ or LCD | |  | | | | | | – | 4,0 |
| <ul style="list-style-type: none">• For remote valves or pump mounting Enerpac VM-series valves• For remote valve mounting order BSS1090 high pressure connecting plate. | | | | | | | | – | 10,0 |
| | | | | | | | | – | 20,0 |
| | | | | | | | | – | 40,0 |
| MANUAL VALVE CONTROL | With manual valve, without electric box or LCD |  | ● | – | ● | – | ● | VM32 | 4,0 |
| | ● | | – | ● | ● | ● | VM33 | 8,0 | |
| | ● | | – | ● | ● | ● | VM33L | 10,0 | |
| | – | | ● | ● | ● | ● | VM43 | 20,0 | |
| | – | | ● | ● | ● | ● | VM43L | 40,0 | |
| | With manual valve, with electric box and LCD |  | ● | – | ● | – | ● | VM32 | 4,0 |
| | ● | | – | ● | – | ● | VM32 | 8,0 | |
| | ● | | – | ● | ● | ● | VM33 | 10,0 | |
| | ● | | – | ● | ● | ● | VM33L | 10,0 | |
| | – | | ● | ● | ● | ● | VM43 | 20,0 | |
| | | | | | | | | | |
| REMOTE VALVE CONTROL | With solenoid dump valve, with electric box and LCD |  | ● | – | ● | – | ● | VE32D | 4,0 |
| | ● | | – | ● | – | ● | VE32D | 8,0 | |
| | ● | | – | ● | – | ● | VE32D | 10,0 | |
| | ● | | – | ● | – | ● | VE32D | 20,0 | |
| | ● | | – | ● | – | ● | VE32D | 40,0 | |
| | With solenoid 3-position valve, with electric box and LCD |  | ● | – | ● | ● | ● | VE33 | 4,0 |
| | ● | | – | ● | ● | ● | VE33 | 8,0 | |
| | ● | | – | ● | ● | ● | VE33 | 10,0 | |
| | – | | ● | ● | ● | ● | VE43 | 10,0 | |
| | – | | ● | ● | ● | ● | VE43 | 20,0 | |
| | – | | ● | ● | ● | ● | VE43 | 40,0 | |

¹⁾ See Valve Section (page 111) for hydraulic symbols and details.

²⁾ For No Valve, with Electric Box, see ordering matrix on page 93.

³⁾ Pendant includes 3 meters cord.

ZE-Series, Electric Pumps

- High-efficiency pump design – higher oil flow and by-pass pressure
- High-strength, moulded electrical box protects electronics, power supplies and LCD readout and stands up to harsh industrial environments
- IP54 protection and isolation class
- Back-lit LCD provides self test, diagnostic and read-out capabilities never before offered on an industrial pump (included on pump with electric valves, optional on other models)
- Totally enclosed, fan-cooled industrial electric motors for extended life
- User adjustable relief valve built-in on manual and solenoid valves. Oil ports on valves are 3/8" NPTF
- Steel fan guard on all electric motors
- Full sight oil level glass
- 40 micron filter breather with splash guard
- Durable steel reservoirs.

ZE Series



Reservoir Capacity:

4 - 40 litres

Flow at Rated Pressure:

0,55 - 2,73 l/min

Motor Size:

0,75 - 5,60 kW

Maximum Operating Pressure:

700 bar



Adjustable Relief Valve

All VM and VE-Series have a user adjustable relief valve to allow the operator to easily set the optimum working pressure.



Locking Valves

For applications requiring positive load holding, VM-Series valves (except VM32) are available with

a pilot-operated check valve. This provides hydraulic locking of the load until the valve is shifted into the retract position. To order this feature on your ZE-series pump see the valve type in the order matrix.

Page: 93



Single or Two-Stage

Choose single-stage pumps for applications that require constant flow regardless of pressure such as testing or clamping.

Two-stage pumps have an increased output flow at low pressure to allow fast movement towards the load, for reduced cycle times and increased productivity.

| ZE3-Series 0,55 l/min at 700 bar Two-stage pump | | ZE4-Series 0,82 l/min at 700 bar Two-stage pump | | ZE5-Series 1,64 l/min at 700 bar Two-stage pump | | ZE6-Series 2,73 l/min at 700 bar Two-stage pump | |
|---|------|---|------|---|------|---|------|
| Model Nr. ⁴⁾ 400V / 3 phase | (kg) | Model Nr. ⁴⁾ 400V / 3 phase | (kg) | Model Nr. ⁴⁾ 400V / 3 phase | (kg) | Model Nr. ⁴⁾ 400V / 3 phase | (kg) |
| ZE3004NW | 36 | ZE4004NW | 40 | – | – | – | – |
| ZE3010NW | 45 | ZE4010NW | 49 | ZE5010NW | 54 | ZE6010NW | 72 |
| ZE3020NW | 57 | ZE4020NW | 61 | ZE5020NW | 66 | ZE6020NW | 84 |
| ZE3040NW | 80 | ZE4040NW | 84 | ZE5040NW | 89 | ZE6040NW | 107 |
| ZE3204MW | 39 | ZE4204MW | 43 | – | – | – | – |
| ZE3308MW | 44 | ZE4308MW | 48 | – | – | – | – |
| ZE3610MW | 50 | ZE4610MW | 54 | ZE5610MW | 59 | ZE6610MW | 77 |
| ZE3420MW | 60 | ZE4420MW | 64 | ZE5420MW | 69 | ZE6420MW | 87 |
| ZE3840MW | 85 | ZE4840MW | 89 | ZE5840MW | 94 | ZE6840MW | 112 |
| ZE3204LW | 42 | ZE4204LW | 46 | – | – | – | – |
| ZE3208LW | 47 | ZE4208LW | 51 | – | – | – | – |
| ZE3310LW | 51 | ZE4310LW | 55 | ZE5310LW | 60 | ZE6310LW | 78 |
| ZE3610LW | 53 | ZE4610LW | 57 | ZE5610LW | 62 | ZE6610LW | 80 |
| ZE3420LW | 63 | ZE4420LW | 67 | ZE5420LW | 72 | ZE6420LW | 90 |
| ZE3840LW | 88 | ZE4840LW | 92 | ZE5840LW | 97 | ZE6840LW | 115 |
| ZE3104DW | 44 | ZE4104DW | 48 | – | – | – | – |
| ZE3108DW | 49 | ZE4108DW | 53 | – | – | – | – |
| ZE3110DW | 53 | ZE4110DW | 57 | ZE5110DW | 62 | ZE6110DW | 79 |
| ZE3120DW | 65 | ZE4120DW | 69 | ZE5120DW | 74 | ZE6120DW | 92 |
| ZE3140DW | 88 | ZE4140DW | 92 | ZE5140DW | 97 | ZE6140DW | 115 |
| ZE3304SW | 49 | ZE4304SW | 53 | – | – | – | – |
| ZE3308SW | 54 | ZE4308SW | 58 | – | – | – | – |
| ZE3310SW | 58 | ZE4310SW | 62 | ZE5310SW | 67 | ZE6310SW | 85 |
| ZE3410SW | 58 | ZE4410SW | 62 | ZE5410SW | 67 | ZE6410SW | 85 |
| ZE3420SW | 70 | ZE4420SW | 74 | ZE5420SW | 79 | ZE6420SW | 97 |
| ZE3440SW | 93 | ZE4440SW | 97 | ZE5440SW | 102 | ZE6440SW | 120 |

⁴⁾ See custom ordering matrix on page 93 for other voltages.

ZE-Series, Options & Accessories

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Electric Box ¹⁾

- Back-lit LCD
- Pump usage information, hour and cycle counts
- Low-voltage warning and recording
- Self-test and diagnostic capabilities
- Pressure read-out ²⁾
- Auto-mode pressure setting ²⁾
- Information can be displayed in six languages ³⁾

¹⁾ Included on pumps with solenoid valves. Can be factory installed on pumps with manual valve.

²⁾ When used with optional pressure transducer.

³⁾ English, French, German, Italian, Spanish and Portuguese.



Level/Temperature Switch ⁴⁾

- Shuts down pump before oil level reaches an unsafe level, avoiding damage due to cavitation
- Shuts down pump when unsafe oil temperature is reached
- Ideal if pump is used in remote area without visual access to oil level.

⁴⁾ 24 V, requires Electric Box. Available for 10, 20 and 40 litres reservoirs.

| Access- sory Kit Modelnr. | Fixed Temperature Signal (°C) | Operating Tempe- rature (°C) | Max. Pressure (bar) |
|---------------------------------|--|---------------------------------------|---------------------------|
| ZLS-U4 * | 80 | 5 - 110 | 10 |

* Add suffix **L** for factory installation.



Return Line Filter

- 25 micron nominal filter removes contaminants from return oil flow before allowing it back into tank
- Internal by-pass valve prevents damage if filter is dirty
- With maintenance indicator
- Replaceable filter element PF25.

| Access- sory Kit Modelnr. | Maximum Pressure (bar) | Maximum Oil Flow (l/min) | By-pass Setting (bar) |
|---------------------------------|------------------------------|--------------------------------|-----------------------------|
| ZPF * | 13,8 | 45,4 | 1,7 |

* Add suffix **F** for factory installation.



Roll Cage

- For easy portability and hoisting
- Protects pump and electric box
- Available for all reservoir sizes.



Skid Bar


- Provides easy two-hand lift
- Provides greater pump stability on soft or uneven surfaces.



Foot Switch ⁵⁾

- Hands-free remote control on solenoid dump and 3-position valves
- With 3 meters cord.


⁵⁾ 15 V, requires Electric Box.

| Accessory Kit Nr. | Fits on reservoir size: |  (kg) |
|----------------------|------------------------------|---|
| ZRC-04 * | 4 and 8 litres ⁵⁾ | 5,5 |
| ZRC-04H * | 4 and 8 litres ⁶⁾ | 6,5 |
| ZRB-10 * | 10 litres | 6,0 |
| ZRB-20 * | 20 litres | 6,0 |
| ZRB-40 * | 40 litres | 6,0 |

* Add suffix **R** for factory installation.

⁵⁾ For pump without heat exchanger

⁶⁾ For pump with heat exchanger.

| Accessory Kit Nr. | Fits on reservoir size: |  (kg) |
|----------------------|------------------------------|---|
| SBZ-4 * | 4 and 8 litres ⁵⁾ | 2,2 |
| SBZ-4L * | 4 and 8 litres ⁶⁾ | 3,2 |

* Add suffix **K** for factory installation.

| Accessory Kit Nr. | Can be used on ZE-Series pumps with |
|----------------------|--|
| ZCF-2 * | Solenoid VE-Series valves |

* Add suffix **U** for factory installation.

ZE-Series, Options & Accessories



Pressure Transducer ¹⁾

- Displays pressure on LCD in bar, MPa or psi
- More accurate than analog gauge
- Calibration can be fine-tuned for certification
- Easy-viewing variable rate display
- “Set pressure” feature turns off motor at user defined pressure ²⁾.

¹⁾ 24 V, requires Electric Box.

²⁾ Or shifts valve to neutral position on pump models with VE33 and VE43 solenoid valves.

| Access-ory Kit Modelnr. | Adjustable Pressure Range (bar) | Switch-point repeatability | Dead-band (bar) |
|-------------------------|---------------------------------|----------------------------|-----------------|
| ZPT-U4 * | 3,5 - 700 | ± 0,5% | 3,5 |

* Add suffix **T** for factory installation.



Pressure Switch ³⁾

- Controls pump, monitors system
 - Adjustable pressure 35-700 bar
 - Includes glycerine filled 1000 bar pressure gauge G2536L
 - Accuracy ± 1,5% of full scale.
- ³⁾ 24 V, requires Electric Box. Not available in combination with pressure transducer.

| Access-ory Kit Modelnr. | Switch-point repeatability | Deadband (bar) | Oil Ports (NPTF) |
|-------------------------|----------------------------|----------------|------------------|
| ZPS-E3 * | ± 2% | 8 - 38 | 3/8" |

* Add suffix **P** for factory installation.



Options

Accessory Kits can be installed by customer. See chart below for options on **Standard Electric** (without electric box) or **LCD Electric** (with electric box). Refer to page 93 for ordering matrix.

| ZE-Series Options | Factory Installed | | Accessory Kits | |
|-----------------------------------|-------------------|-------------|----------------|-------------|
| | Std. Electr. | LCD Electr. | Std. Electr. | LCD Electr. |
| Return Line Filter | F | F | ZPF | ZPF |
| Skid Bar ¹⁾ | K | K | SBZ | SBZ |
| Roll Cage | R | R | ZRB | ZRB |
| Single-stage | S | S | – | – |
| Heat Exchanger | – | H | – | ZHE |
| Pressure Gauge ²⁾ | G | G | – | – |
| Pressure Switch ³⁾ | – | P | – | ZPS-E3 |
| Pressure Transducer ⁴⁾ | – | T | – | ZPT-U4 |
| Level/Temp Switch ⁵⁾ | – | L | – | ZLS-U4 |
| Foot Switch ⁶⁾ | – | U | – | ZCF-2 |

¹⁾ Available for 4 and 8 litres reservoirs.

²⁾ Not available on pumps with pressure transducer.

³⁾ Includes 1000 bar gauge. Only available on manual valves without locking feature.

⁴⁾ Electric box can accept either pressure switch or pressure transducer, but not both.

⁵⁾ Available for 10, 20 and 40 litres reservoirs.

⁶⁾ For control of solenoid dump and 3-position valves.



Pendants ⁴⁾

- For pump types with valve operation “W” (No Valve, with Electric Box, without pendant).

⁴⁾ When ordering Enerpac VE-Series solenoid valve the pendant must be ordered separately. Pendant connection to be plugged into electric box.

| Pendant Model Nr. | To be used with solenoid valve: |
|-------------------|---------------------------------|
| ZCP-1 | VE32D |
| ZCP-3 | VE32, VE33, VE43 |



Heat Exchanger ⁵⁾

- Removes heat from by-pass oil to provide cooler operation
- Stabilizes oil viscosity, increasing oil life and reduces wear of pump and other hydraulic components.

| Accessory Kit Nr. | Fits on reservoir size: | (kg) |
|-------------------|-------------------------|------|
| ZHE-E04 * | 4 and 8 litres | 4,1 |
| ZHE-E10 * | 10, 20 and 40 litres | 4,1 |

⁵⁾ 24 VDC, requires electric box.

* Add suffix **H** for factory installation.



ZPT-U4 Pressure Transducer

More durable against mechanical and hydraulic shock than analog gauges.

- Digital pressure read-out provides accuracy of 0,5% of full scale.
- Easy-viewing variable rate display automatically varies increments between 3, 14, 35 and 145 bar as rate of pressure change increases.
- “Set pressure” feature turns off motor at user defined pressure (or shifts valve to neutral on VE33 and VE43 valves).

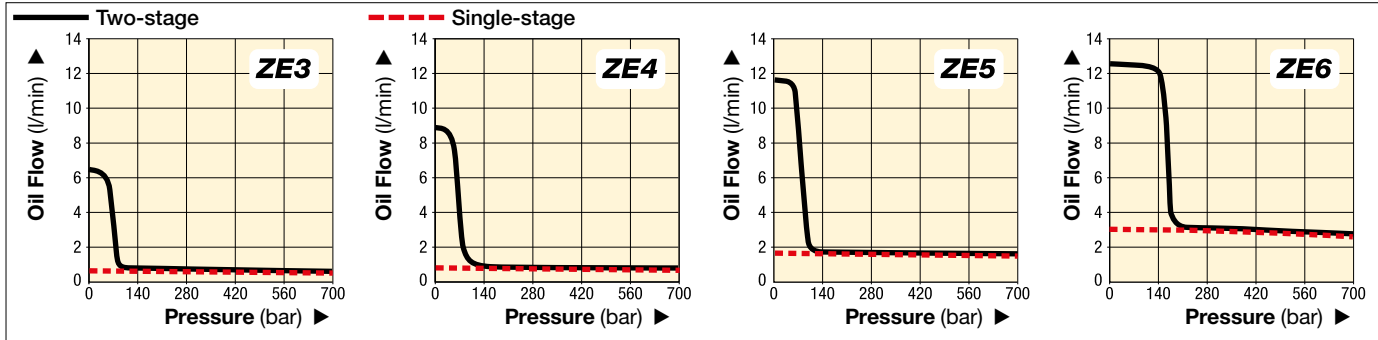


ZHE-Series Heat Exchangers

Heat exchanger stabilizes oil temperature at 54 °C at 21 °C ambient temperature. Thermal transfer at 1,9 l/min and 21 °C ambient temperature: 900 Btu/hour [950 kJ].

Do not exceed max. oil flow of 26,5 l/min and max. pressure of 20,7 bar. Not suitable for water-glycol or high water based fluids.

ZE-Series, Specifications & Dimensions



▼ ZE-SERIES PERFORMANCE CHART

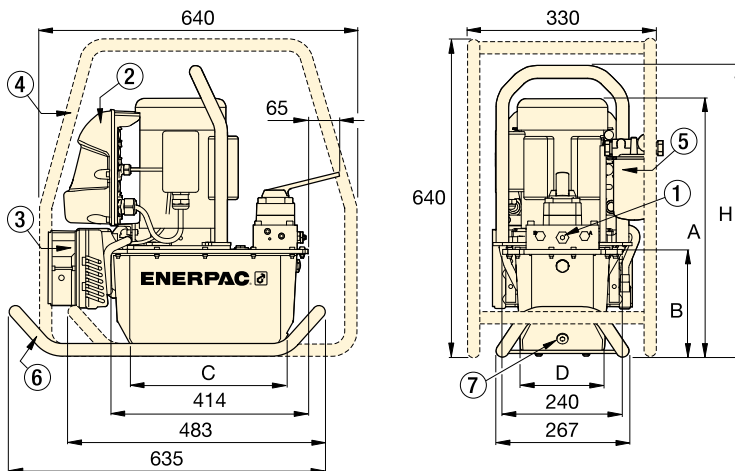
| Pump Series | Output Flow Rate at 50 Hz * (l/min) | | | | Pump Unit | Available Reservoir Sizes (useable oil) (litres) | Motor Size (kW) | Relief Valve Adjustment Range (bar) | Sound Level (dBA) |
|-------------|--|--------------|--------------------------------|---------------|--------------|--|--------------------|--|----------------------|
| | low pressure at 7 bar | at 50 bar | high pressure at 350 bar | at 700 bar | | | | | |
| ZE3 | 0,59 | 0,59 | 0,57 | 0,55 | Single-stage | 4-8-10-20-40 | 0,75 | 70-700 | 75 |
| | 6,15 | 5,26 | 0,57 | 0,55 | Two-stage | | | | |
| ZE4 | 0,87 | 0,87 | 0,84 | 0,82 | Single-stage | 4-8-10-20-40 | 1,12 | 70-700 | 75 |
| | 8,88 | 8,20 | 0,84 | 0,82 | Two-stage | | | | |
| ZE5 | 1,75 | 1,72 | 1,68 | 1,64 | Single-stage | 10-20-40 | 2,24 | 70-700 | 75 |
| | 11,61 | 11,27 | 1,68 | 1,64 | Two-stage | | | | |
| ZE6 | 3,00 | 2,94 | 2,86 | 2,73 | Single-stage | 10-20-40 | 5,60 | 70-700 | 80 |
| | 12,29 | 12,15 | 2,86 | 2,73 | Two-stage | | | | |

* Oil flow will be approximately 6/5 of these values at 60 Hz.

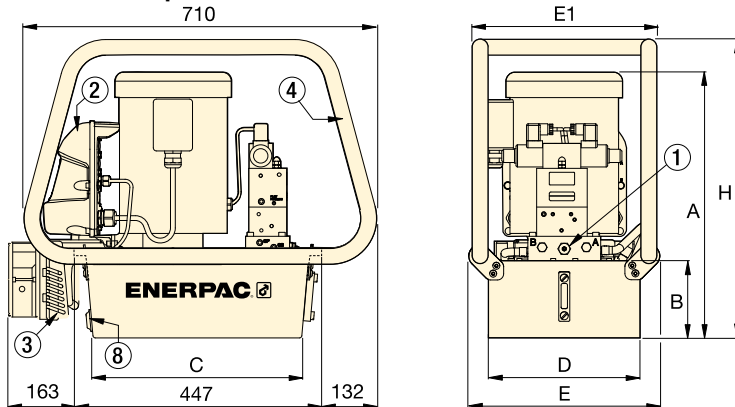


Single or Two-Stage

Choose single-stage pumps for applications that require constant flow regardless of pressure such as testing or clamping. Two-stage pumps have an increased output flow at low pressure to allow fast movement towards the load, for reduced cycle times and increased productivity.



ZE-Series Pumps with 4 - 8 litres reservoir



ZE-Series Pumps with 10 - 20 - 40 litres reservoir

- ① User adjustable relief valve on all manual and solenoid valves.
3/8" NPTF on A and B ports;
1/4" NPTF on auxiliary ports.
- ② Electric Box
- ③ Heat Exchanger
- ④ Roll Cage
- ⑤ Return Line Filter
- ⑥ Skid Bar
- ⑦ Magnetic Oil Drain
- ⑧ Oil Drain / Oil Level/Temperature Switch

| Reservoir Size (useable oil in litres) | ZE-Series Pump Dimensions (mm) | | | | | | |
|---|--------------------------------|-----|-----|-----|-----|-----|-----|
| | A | B | C | D | E | E1 | H |
| 4,0 | 457 | 143 | 279 | 152 | — | — | 513 |
| 8,0 | 457 | 143 | 279 | 206 | — | — | 513 |
| 10,0 | 533 | 158 | 419 | 305 | 384 | 371 | 600 |
| 20,0 | 558 | 180 | 419 | 422 | 501 | 488 | 625 |
| 40,0 | 648 | 270 | 399 | 505 | 576 | 572 | 715 |

ZE-Series, Pump Ordering Matrix

▼ This is how ZE-Series pump model numbers are built up:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--------------|------------|------------|------------|----------------|-----------------|---------------|-------------------------|
| Z | E | 4 | 1 | 10 | D | W | - F H L T |
| Product Type | Motor Type | Flow Group | Valve Type | Reservoir Size | Valve Operation | Motor Voltage | Options and Accessories |

1 Product Type

Z = Pump Class

2 Prime Mover

E = Induction electric motor

3 Flow Group

3 = 0,55 l/min @ 700 bar (0,75 kW)

4 = 0,82 l/min @ 700 bar (1,12 kW)

5¹⁾ = 1,64 l/min @ 700 bar (2,24 kW)

6¹⁾ = 2,73 l/min @ 700 bar (5,60 kW)

4 Valve Type

0 = No valve, with cover plate

1 = 3/2 Dump valve **VE32D**

2 = 3/2 manual **VM32**

3 = 3/3 manual **VM33** or electric **VE33**

4 = 4/3 manual **VM43** or electric **VE43**

6 = 3/3 manual locking valve **VM33L** with pilot operated check.

8 = 4/3 manual locking valve **VM43L** with pilot operated check.

5 Reservoir Size, useable oil

04²⁾ = 4 litres

08²⁾ = 8 litres

10 = 10 litres

20 = 20 litres

40 = 40 litres

8 Options and Accessories

F = Return Line Filter

G⁶⁾ = 1000 bar gauge

H⁷⁾ = Heat exchanger

K = Skid Bar (only on 4 and 8 litres)

L⁷⁾ = Oil Level/Temperature Switch ⁸⁾

N = No reservoir handles (includes lifting eyes)

6 Valve Operation

D = Dump valve (solenoid), with pendant and Electric Box (LCD)

L = Manual valve, without pendant, with Electric Box

M = Manual valve, without pendant, without Electric Box

N = No valve, without Electric Box

S = Solenoid valve, with pendant and Electric Box (LCD)

W = No valve, with Electric Box (LCD), without pendant ¹⁰⁾

7 Motor Voltage

Single phase motor ³⁾

B³⁾ = 115V, 1 ph, 50-60Hz

E³⁾ = 208-240V, 1 ph, 50-60 Hz ⁴⁾

I = 208-240V, 1 ph, 50-60 Hz USA plug

Three phase motor ⁵⁾

M⁵⁾ = 190-200V, 3 ph, 50-60Hz

G⁵⁾ = 208-240V, 3 ph, 50-60 Hz

W⁵⁾ = 380-415V, 3 ph, 50-60 Hz

K⁵⁾ = 440V, 3 ph, 50-60 Hz

J⁵⁾ = 460-480V, 3 ph, 50-60 Hz

R⁵⁾ = 575V, 3 ph, 60 Hz

P⁷⁾ = Pressure Switch (only available on manual valves without locking feature)

R = Roll Cage

S = Single-stage pump unit

T⁷⁾ = Pressure transducer ⁹⁾

U⁷⁾ = Foot Switch

¹⁾ ZE5 and ZE6-Series only available with 3-phase electric motors.

²⁾ 4 and 8 litres only available on ZE3 and ZE4-Series.

³⁾ 1-phase motors only available on ZE3 and ZE4-Series

⁴⁾ 208-240V, 1 ph with European plug EMC directive compliant.

⁵⁾ Models with 3-ph motors without Electric Box shipped without cord, motor starter or overload protection.

⁶⁾ Not available on pumps with pressure transducer (T).

⁷⁾ Requires Electric Box.

⁸⁾ Not available on 4 and 8 litres reservoir.

⁹⁾ Provides digital pressure read-out on LCD-display of electric box.

¹⁰⁾ When using solenoid valve on valve type "W" order optional pendant.

All Z-Class electric pumps comply with TÜV and CE requirements.



ZE Series



Reservoir Capacity:

4 - 40 litres

Flow at Rated Pressure:

0,55 - 2,73 l/min

Motor Size:

0,75 - 5,60 kW

Maximum Operating Pressure:

700 bar



How to Order Single-Stage Pumps

To specify a single-stage pump, place the letter "S" at the end of the model number. For example:

ZE4210ME-S

ZE4-Series pump, oil flow 0,82 l/min at 700 bar, VM32 manual valve, 10 litres reservoir, without electrical box, without pendant, 240 Volt 1-phase electric motor and single-stage pump unit.

ZE3120DW-S

ZE3-Series pump, oil flow 0,55 l/min at 700 bar, VE32D solenoid dump valve, 20 litres reservoir, with electrical box (LCD), without pendant, 400 Volt 3-phase electric motor and single-stage pump unit.



Pendants

When ordering Enerpac VE-Series solenoid valve for use on "W" type valve operation (No Valve, with

Electric Box (LCD), without pendant) the pendant must be ordered separately. Pendant connection to be plugged into electric box.

SFP-Series, 700 bar Split Flow Pumps

ENERPAC 
POWERFUL SOLUTIONS. GLOBAL FORCE.

▼ SFP421SW and SFP404SW



- 2, 4 or 6 split-flow outlets
- Individual or simultaneously operation of valves, with advance/hold/retract function
- Joystick (manual) controlled or pendant (solenoid) controlled valves
- Flow per outlet ranging from 0,45 to 4,2 l/min at 700 bar
- For double- and single-acting cylinders
- Adjustable pressure relief valve per circuit
- Reservoir: 40 or 150 litres.

▼ Step-by-step stage lifting an old windmill using double-acting RR-506 cylinders powered by a split-flow pump.



Multiple Outlets with Equal Oil Flow



Typical Split Flow Pump Applications

For lifting applications on multiple points Split-Flow Pumps are a far better alternative than using separate operated pumps. Where synchronization of maximum 4% is acceptable and load is even distributed over the lifting points, split flow pumps are a safe and economical solution.

The SFP-Series pumps feature both single and synchronized multiple outlet control either through joystick or pendant operation.

Application examples:

- Bridge deck lifting for bearing maintenance
- Stage lifting in construction and shipbuilding
- Skidding to move structures and buildings
- Levelling of constructions like wind turbines.



Remote Control Pendant

Split Flow pumps with solenoid valves include a remote pendant with selector switches for each individual outlet, allowing single or multiple cylinder operation.



Gauges and Adaptors

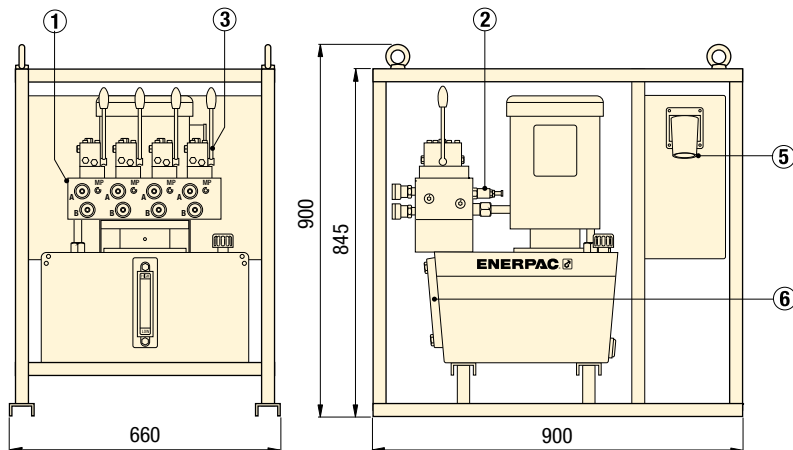
Always use gauges to visualise pressure or load in your hydraulic system to work safer.



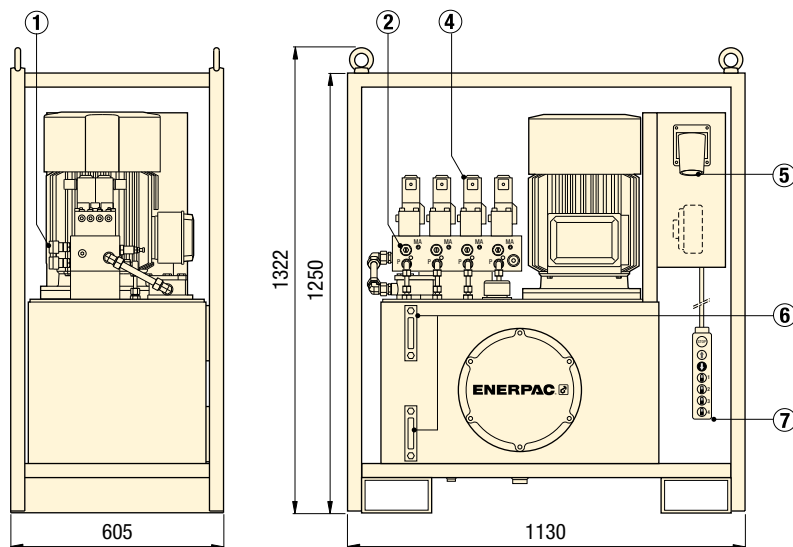
Hoses and Couplers

Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac System Components.

700 bar Split Flow Hydraulic Pumps



SFP-Series with 40 litres reservoir (shown with 4 split flow outlets)



SFP-Series with 150 litres reservoir (shown with 4 split flow outlets)

| Number of Split Flow Outlets | Reservoir Size (litres) | Oil Flow per Outlet @ 700 bar (l/min) | Pump Model Number 4/3 Valve Operation Advance/Hold/Retract | | Motor Size 400 V - 3ph 50 Hz (kW) | Weight (kg) |
|------------------------------|-------------------------|---------------------------------------|--|-------------------------|--|-------------|
| | | | Manual (Joystick) | 24 V Solenoid (Pendant) | | |
| 2 | 40 | 1,30 | SFP 213MW | — | 5,5 | 240 |
| | | | — | SFP 213SW | | 240 |
| | 150 | 2,80 | SFP 228MW | — | 7,5 | 488 |
| | | | — | SFP 228SW | | 488 |
| | | 4,20 | SFP 242MW | — | 11 | 526 |
| | | | — | SFP 242SW | | 526 |
| 4 | 40 | 0,45 | SFP 404MW | — | 5,5 | 240 |
| | | | — | SFP 404SW | | 240 |
| | 150 | 0,90 | SFP 409MW | — | 5,5 | 475 |
| | | | — | SFP 409SW | | 475 |
| | | 1,40 | SFP 414MW | — | 7,5 | 488 |
| | | | — | SFP 414SW | | 488 |
| | | 2,10 | SFP 421MW | — | 11 | 526 |
| | | | — | SFP 421SW | | 526 |
| 6 | 40 | 0,45 | SFP 604MW | — | 5,5 | 240 |
| | | | — | SFP 604SW | | 240 |

SFP Series



Reservoir Capacity:

40 - 150 litres

Split Flow Outlets:

2, 4 and 6 outlets

Flow at Rated Pressure:

0,45 - 4,20 l/min

Maximum Operating Pressure:

700 bar

- ① Manifold with split flow outlets and CR-400 couplers
- ② Adjustable pressure relief valve per circuit
- ③ Manual 4/3 control valves with joysticks
- ④ Solenoid 4/3 control valves (24 VDC)
- ⑤ 3+N+PE 400V 16A plug
- ⑥ Oil sight gauge(s)
- ⑦ Remote control pendant with 10 meter cable.



Lifting Cylinders

For a complete line of Enerpac cylinders, see the Cylinder and Lifting Products in our catalogue.

Page: 5



Lifting an unbalanced load?

See the Enerpac **EVO-Series** modular PLC-controlled synchronous lifting systems to control 4, 8 or 12 lifting points.

Page: 234

▼ Split flow pump used to operate double-acting cylinders to lift steel bridge segments.



▼ Shown: **XA11G**



- Ergonomic design for less operator fatigue
- Variable oil flow & fine metering for precise control
- Higher oil flow for increased productivity
- Closed hydraulic system prevents contamination and allows pump usage in any position
- Pedal lock function for retract position
- External adjustable pressure setting valve
- Ground screw for improved ATEX explosion safety.

 II 2 GD ck T4

XVARI[®]
TECHNOLOGY

Productivity & Ergonomics



Optional Pressure Gauge

Integrated gauge with calibrated scale reading in bar, psi and MPa for actual pressure reading.



4/3 Control Valve

For powering double-acting hydraulic cylinders and tools.



2 Litres Reservoir

Double oil capacity for powering larger hydraulic cylinders and tools.



Pedal Safety Guard

Customer installed frame protects both pedals against accidental activation.

Model Number ¹⁾

XPG1



"Joy-stick" Lever Kit

Customer installed set of handles for manual operation of both pedals.

Model Number ¹⁾

XLK1



Swivel Connector

Customer installed swivel connector for optimal orientation of the hydraulic hose. See page 121 for details.

Model Number ¹⁾

XSC1

¹⁾ Accessories must be ordered separately.

XVARI® Technology, Air Driven Hydraulic Foot Pumps

XA Series



Reservoir Capacity:

1,0 - 2,0 litres

Flow at Rated Pressure:

0,25 l/min

Air Consumption:

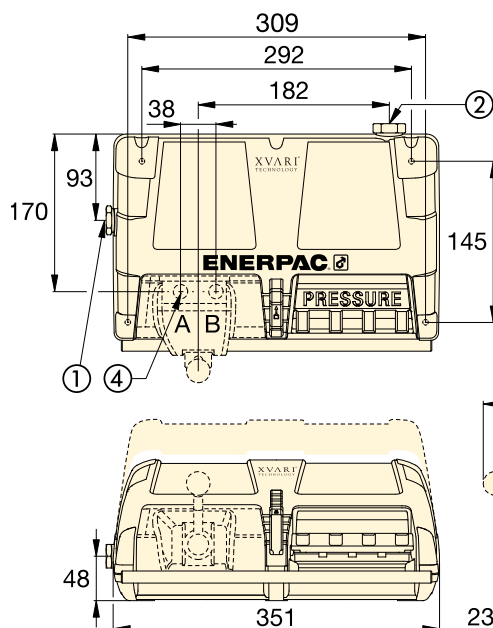
283 - 991 l/min

Maximum Operating Pressure:

700 bar

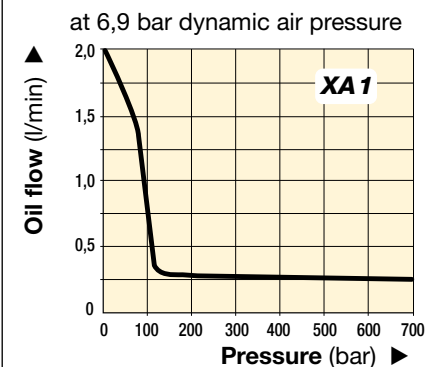
▼ XA-SERIES PERFORMANCE CHART

| Maximum Pressure (bar) | Output Flow Rate (l/min) | | Pump Series | Valve Function | Dynamic Air Pressure (bar) |
|---------------------------|-----------------------------|------|-------------|--------------------------|-------------------------------|
| | No load | Load | | | |
| 700 | 2,0 | 0,25 | XA1 | Advance / Hold / Retract | 2,1 - 8,6 |



- ① 3/8"-18 NPTF Oil outlet
- ② 1/4"-18 NPTF Air inlet
- ③ 4/3 Optional control valve
- ④ 3/8"-18 NPTF Oil outlet

OIL FLOW VERSUS PRESSURE



Regulator-Filter-Lubricator

Recommended for use with all XA-Series Air pumps. Provides clean, lubricated air and allows for air pressure adjustment.

Model Number ¹⁾

RFL-102

▼ SELECTION CHART

| For use with cylinder or tool | Usable Oil Capacity (litres) | Model Number ¹⁾ | Pressure Gauge | 3-way 3-pos. Valve | 4-way 3-pos. Valve | Dimensions (mm) | | | (kg) |
|-------------------------------|------------------------------|----------------------------|----------------|--------------------|--------------------|-----------------|-----|-----|------|
| | | | | | | H1 | H2 | L | |
| Single-acting | 1,0 | XA 11 ²⁾ | — | • | — | 152 | — | — | 8,6 |
| | 2,0 | XA 12 ²⁾ | — | • | — | — | 170 | — | 10,2 |
| Single-acting | 1,0 | XA 11G | • | • | — | 152 | — | — | 8,8 |
| | 2,0 | XA 12G | • | • | — | — | 170 | — | 10,4 |
| Double-acting | 1,0 | XA 11V | — | — | • | 152 | — | 279 | 10,1 |
| | 2,0 | XA 12V | — | — | • | — | 170 | 279 | 11,7 |
| Double-acting | 1,0 | XA 11VG | • | — | • | 152 | — | 279 | 10,3 |
| | 2,0 | XA 12VG | • | — | • | — | 170 | 279 | 11,9 |

¹⁾ High-Flow coupler CR-400 and accessories must be ordered separately. ²⁾ Available as cylinder-pump set, see page 58.

▼ Shown from top to bottom: PAMG-1402N, PARG-1102N, PATG-1102N, PATG-1105N



- External adjustable pressure relief valve (behind sight glass)
- Return-to-tank port for use in remote valve applications
- Internal pressure relief valve provides overload protection
- Quieter operation – reduced noise level to 76 dBA
- Operating air pressure: 2,8 - 8,8 bar, enables pump to start at extremely low pressure
- High efficiency cast aluminium air motor
- Reinforced heavy-duty lightweight reservoir for applications in tough environments
- Air pendant for remote control operation.

Compact Air Over Hydraulic



Regulator-Filter-Lubricator

Recommended for use with all Turbo air pumps. Provides clean, lubricated air and allows for air pressure adjustment. Steel bowl guards are standard.

Model Number

RFL-102



Large Reservoir Models

The Turbo II Air Pump is also available with an enlarged reservoir: **PATG-1105N**, **PAMG-1405N** and **PARG-1105N**.



Hoses

Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

Page: **116**



◀ Easily operated by hand or by foot.

| Used with Cylinder | Usable Oil Capacity (cm ³) | Model Number |
|--------------------|---|-------------------|
| Single-Acting | 2081 | PATG-1102N |
| | 3770 | PATG-1105N |
| Single-Acting | 2081 | PARG-1102N |
| | 3770 | PARG-1105N |
| Double-Acting | 2081 | PAMG-1402N |
| | 3770 | PAMG-1405N |

PA-Series, Turbo II Air Hydraulic Pumps



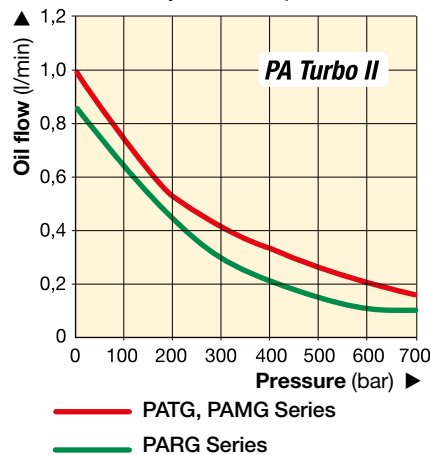
PATG-models use a foot or hand operated treadle to control air and valve functions.

PAMG-models use a treadle with a locking feature to control air, and a 4-way manual valve to control hydraulics.

PARG-models use air pendant for remote control.

OIL FLOW VERSUS PRESSURE

at 6,9 bar dynamic air pressure



PATG PAMG PARG Series



Reservoir Capacity:

2,5 - 5,0 litres

Flow at Rated Pressure:

0,10 - 0,16 l/min

Air Consumption:

227 - 340 l/min

Maximum Operating Pressure:

700 bar

| Maximum Pressure (bar) | Output Flow Rate (l/min) | | Pump Series | Valve Function | Air Pressure Range (bar) | Air Consumption at 5,2 bar air (l/min) | Sound Level (dBA) |
|---------------------------|-----------------------------|------|-------------|----------------|-----------------------------|---|----------------------|
| | No Load | Load | | | | | |
| 700 | 1,00 | 0,16 | PATG | A / H / R * | 2,8 - 8,8 | 340 | 76 |
| 700 | 0,76 | 0,10 | PARG | A / H / R * | 2,8 - 10,3 | 227 | 76 |
| 700 | 1,00 | 0,16 | PAMG | A / H / R * | 2,8 - 8,8 | 340 | 76 |

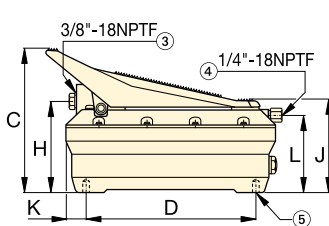
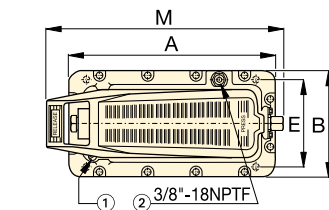
* Valve function: Advance / Hold / Retract.



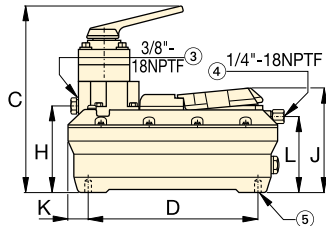
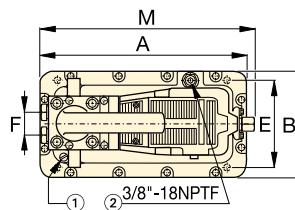
Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

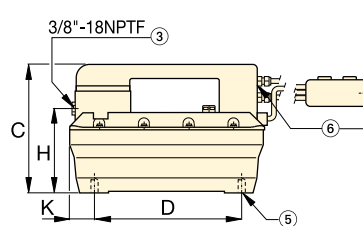
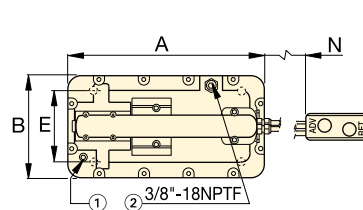
Page: 255



**PATG-1102N
PATG-1105N**




**PAMG-1402N
PAMG-1405N**



**PARG-1102N
PARG-1105N**

- ① Filtered 'Permanent' Tank Vent
- ② Return-to-Tank/Auxiliary Vent/Fill Tank Port
- ③ Hydraulic Output
- ④ Swivel Air Input with Filter
- ⑤ 4 Mounting Holes for #10 thread forming screw. Maximum depth into reservoir = 19 mm
- ⑥ Air Input with Filter on PARG models 1/4"-18NPTF

| | Valve Operation | Turbo II Dimensions (mm) | | | | | | | | | | | | |  | Model Number |
|--|--------------------|--------------------------|-----|-----|-----|-----|----|-----|-----|----|-----|-----|------|------|---|-----------------|
| | | A | B | C | D | E | F | H | J | K | L | M | N | (kg) | | |
| | Treadle 3/3 | 313 | 165 | 211 | 230 | 102 | – | 129 | 146 | 42 | 113 | 347 | – | 8,2 | PATG-1102N | |
| | | 396 | 201 | 209 | 230 | 102 | – | 131 | 146 | 86 | 112 | 437 | – | 9,9 | PATG-1105N | |
| | Air Pendant 3/3 | 313 | 165 | 200 | 230 | 102 | – | 129 | – | 42 | – | – | 4500 | 10,0 | PARG-1102N | |
| | | 396 | 201 | 209 | 230 | 102 | – | 131 | – | 86 | – | – | 4500 | 11,7 | PARG-1105N | |
| | Manual 4/3 | 313 | 165 | 267 | 230 | 102 | 36 | 130 | 152 | 42 | 113 | 315 | – | 11,0 | PAMG-1402N | |
| | | 396 | 201 | 267 | 230 | 102 | 36 | 132 | 152 | 86 | 112 | 405 | – | 12,7 | PAMG-1405N | |

PA-Series, Air Hydraulic Foot Pumps

ENERPAC 
POWERFUL SOLUTIONS. GLOBAL FORCE.

▼ Shown: PA-1150, PA-133



PA Series

Reservoir Capacity:

0,6 - 1,3 litres

Flow at Rated Pressure:

0,13 l/min

Air Consumption:

255 l/min

Maximum Operating Pressure:

700 bar



Reservoir Conversion Kit

Double the reservoir capacity of your existing PA-133 with this easy to install conversion kit.

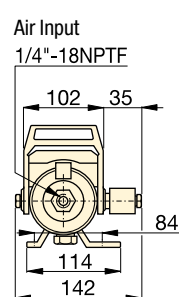
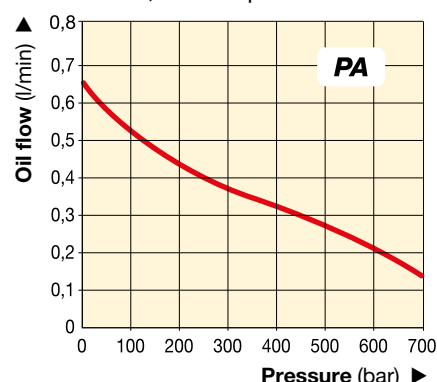
Model Number

PC-66

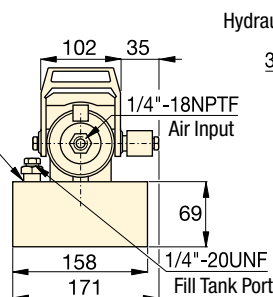
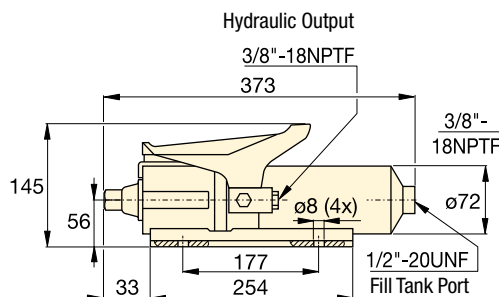
- Rugged construction – built for long life and easy service
- Swivel coupling simplifies hydraulic connection and pump operation
- Three-position treadle provides cylinder advance, hold or retract operation
- Operates in all positions for increased versatility in use and mounting (except PA-1150)
- Base mounting slots provided on PA-133.

OIL FLOW VERSUS PRESSURE

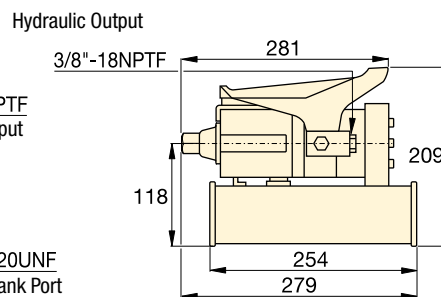
at 6,9 bar air pressure




PA-133



PA-1150



| Used with Cylinder | Usable Oil Capacity (cm ³) | Model Number | Pressure Rating (bar) | Output Flow Rate (l/min) | | Valve Function | Air Pressure Range * (bar) | Air Consumption (l/min) | Sound Level (dBA) |  (kg) |
|--------------------|--|--------------|-----------------------|--------------------------|------|--------------------------|----------------------------|-------------------------|-------------------|--|
| | | | | No load | Load | | | | | |
| Single-Acting | 589 | PA-133 | 700 | 0,65 | 0,13 | Advance / Hold / Retract | 4,1 - 8,3 | 255 | 85 | 5,4 |
| | 1311 | PA-1150 | 700 | 0,65 | 0,13 | Advance / Hold / Retract | 4,1 - 8,3 | 255 | 85 | 8,2 |

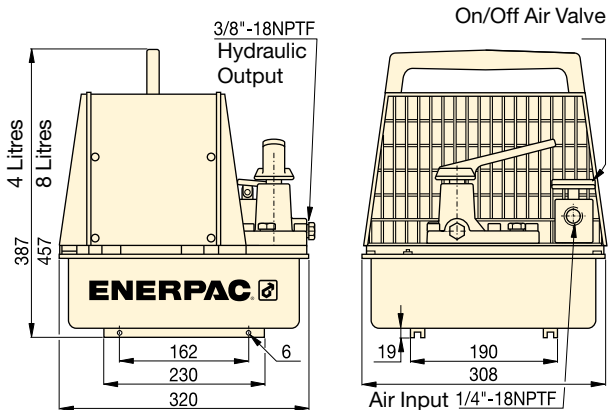
* Recommended Regulator-Filter-Lubricator: RFL-102.

PAM-Series, Air Hydraulic Pumps

▼ Shown: **PAM-1041**



- Twin air motor configuration delivers high-flow performance in first stage, up to 14 bar, for rapid cylinder advance
- 4 and 8 litres reservoirs for use with a wide range of cylinders
- Integral shroud protects air motors and provides easy portability.



PAM Series

Reservoir Capacity:

4,0 - 8,0 litres

Flow at Rated Pressure:

0,15 l/min

Air Consumption:

510 l/min

Maximum Operating Pressure:

700 bar



Locking Valves

Pumps with 4/3 manual valves are available with 4/3 manual locking valves instead. Add suffix "L" to pump model number.

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Remote Air Valve

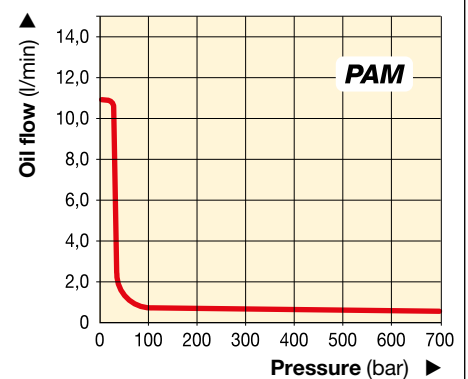
For remote operation of PAM-Series air pumps. Permits either hand or foot operation.

Model Number

VA-2

OIL FLOW VERSUS PRESSURE

at 6,9 bar air pressure



| Used with Cylinder | Usable Oil Cap. (litres) | Model Number with Shroud | Pressure Rating (bar) | Output Flow Rate (l/min) | | Valve Function | Valve Type | Air Pressure Range * (bar) | Air Consumption (l/min) | Sound Level (dBA) | Weight (kg) |
|--------------------|--------------------------|--------------------------|-----------------------|--------------------------|-----------------------|--------------------------|------------|----------------------------|-------------------------|-------------------|-------------|
| | | | | 1 st stage | 2 nd stage | | | | | | |
| Single-Acting | 2,6 | PAM-1021 | 700 | 10,65 | 0,15 | Advance / Hold / Retract | 3/2 | 4,1 - 8,3 | 510 | 87 | 22,7 |
| | 7,6 | PAM-1022 | 700 | 10,65 | 0,15 | Advance / Hold / Retract | 3/2 | 4,1 - 8,3 | 510 | 87 | 27,2 |
| Double-Acting | 2,6 | PAM-1041 | 700 | 10,65 | 0,15 | Advance / Hold / Retract | 4/3 | 4,1 - 8,3 | 510 | 87 | 22,7 |
| | 7,6 | PAM-1042 | 700 | 10,65 | 0,15 | Advance / Hold / Retract | 4/3 | 4,1 - 8,3 | 510 | 87 | 27,2 |

* Recommended Regulator-Filter-Lubricator: RFL-102.

ZA4-Series, Modular Air Hydraulic Pumps

ENERPAC 
POWERFUL SOLUTIONS. GLOBAL FORCE.

▼ Shown: ZA4208MX, ZA4420MX



Z Tough
Dependable
Innovative
CLASS



ATEX 95 Certified

The Enerpac ZA4-series air pumps are tested and certified according to the **Equipment Directive 94 / 9 / EC "ATEX Directive"** for equipment and protective systems intended for use in potentially explosive atmospheres.

Ex II 2 GD ck T4

Page: 245

- ATEX 95 certified for use in potentially explosive atmospheres
- Features Z-Class high efficiency pump design, higher oil flow and bypass pressure
- Two-speed operation reduces cycle time for improved productivity
- User adjustable relief valve built-in on manual valves. Oil ports on valves are 3/8" NPTF
- Optional heat exchanger warms exhaust air to prevent freezing and cools the oil
- Full sight oil level glass on 10, 20 and 40 litres reservoirs, oil level indicators on 4 and 6,6 litres reservoirs.



Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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Hoses

Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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| Used with Cylinder | Usable Oil Capacity (litres) | Manual Valve ¹⁾ Model Number | Valve Function | Model Number | Output Flow Rate ³⁾ | | | | Relief Valve Adjustment Range (bar) | Maximum Air Consumption ⁴⁾ (l/min) |
|--------------------|------------------------------|---|--------------------------|------------------------|--------------------------------|-----------|------------|------------|-------------------------------------|---|
| | | | | | at 7 bar | at 50 bar | at 350 bar | at 700 bar | | |
| — | 4,0 | — ²⁾ | — | ZA4004NX ²⁾ | 14,0 | 11,0 | 1,8 | 1,3 | — | 2840 |
| Single-acting | 4,0 | VM32 | Advance / Retract | ZA4204MX | 14,0 | 11,0 | 1,8 | 1,3 | 70 - 700 | 2840 |
| | 6,6 | VM33 | Advance / Hold / Retract | ZA4308MX | 14,0 | 11,0 | 1,8 | 1,3 | 70 - 700 | 2840 |
| | 10,0 | VM33L | Advance / Hold / Retract | ZA4610MX | 14,0 | 11,0 | 1,8 | 1,3 | 70 - 700 | 2840 |
| Double-acting | 4,0 | VM43 | Advance / Hold / Retract | ZA4404MX | 14,0 | 11,0 | 1,8 | 1,3 | 70 - 700 | 2840 |
| | 6,6 | VM43 | Advance / Hold / Retract | ZA4408MX | 14,0 | 11,0 | 1,8 | 1,3 | 70 - 700 | 2840 |
| | 10,0 | VM43L | Advance / Hold / Retract | ZA4810MX | 14,0 | 11,0 | 1,8 | 1,3 | 70 - 700 | 2840 |
| | 20,0 | VM43 | Advance / Hold / Retract | ZA4420MX | 14,0 | 11,0 | 1,8 | 1,3 | 70 - 700 | 2840 |
| | 40,0 | VM43 | Advance / Hold / Retract | ZA4440MX | 14,0 | 11,0 | 1,8 | 1,3 | 70 - 700 | 2840 |

¹⁾ See pages 110-111 for hydraulic symbols of these valves.

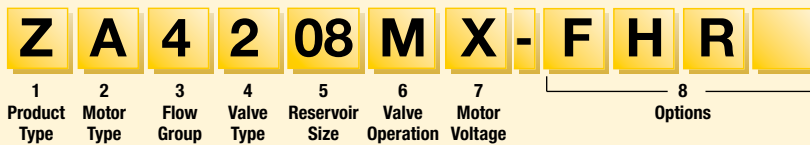
²⁾ For remote valve mounting order **BSS1090** high pressure connecting plate.

³⁾ Actual oil flow will vary with air supply.

⁴⁾ Dynamic air pressure range: 4 - 7 bar.

Modulair Air Hydraulic Pumps

▼ This is how a ZA4-Series pump model number is built up:



1 Product Type

Z = Pump Class

2 Prime Mover

A = Air motor

3 Flow Group

4 = 1,3 l/min @ 700 bar

4 Valve Type

0 = No valve, with cover plate

2 = 3/2 manual valve VM32

3 = 3/3 manual valve VM33

4 = 4/3 manual valve VM43

6 = 3/3 manual locking valve VM33L with pilot operated check

7 = 3/2 manual valve VM22

8 = 4/3 manual locking valve VM43L with pilot operated check.

6 Valve Operation

M = Manual valve

N = No valve

7 Motor Voltage

X = Not applicable

8 Options

F = Return Line Filter

G = 1000 bar gauge

H = Heat exchanger (on 4 and 6,6 litres reservoir only)

K = Skid Bar (on 4 and 6,6 litres reservoir only)

N = No reservoir handles (includes lifting eyes on 10, 20 and 40 litres)

R = Roll Cage

Ordering Example

Model Number: **ZA4208MX-FHK**

ZA4208MX-FHK is an air operated pump with a 3-way, 2-position manual valve, 6,6 litres reservoir, filter, heat exchanger and skid bar.

ZA4 Series



Reservoir Capacity:

4 - 40 litres

Flow at Rated Pressure:

1,3 l/min

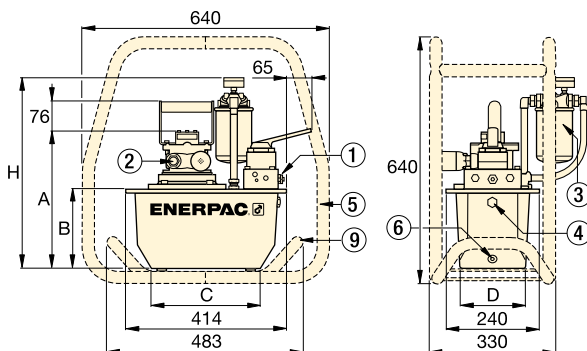
Air Consumption:

2840 l/min

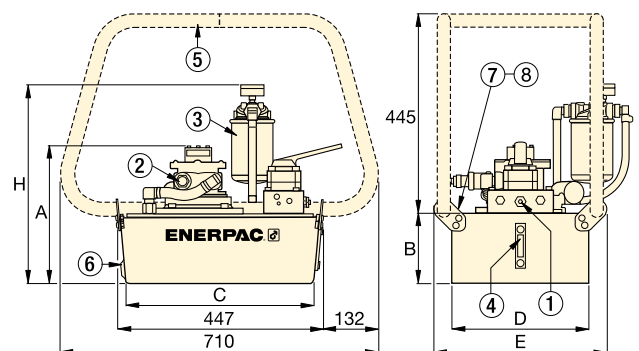
Maximum Operating Pressure:

700 bar

- ① User adjustable relief valve on all manual valves. 3/8" NPTF on A and B ports; 1/4"NPTF on auxiliary ports.
- ② Air inlet 1/2" NPTF
- ③ Return Line Filter (*optional*)
- ④ Oil Sight Gauge
- ⑤ Roll Cage (*optional*)
- ⑥ Oil Drain
- ⑦ Lifting eyes (*optional*)
- ⑧ Handles
- ⑨ Skid Bar (Modelnr. SBZ-4) (*optional*)



ZA4-Series Pumps with 4 - 6,6 litres reservoir

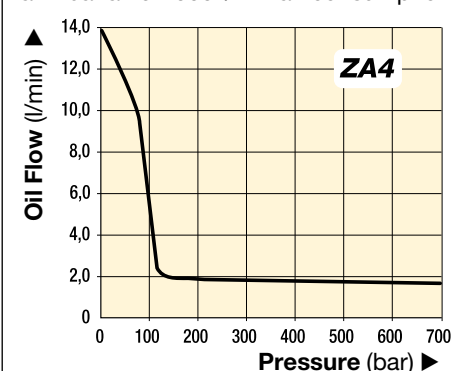


ZA4-Series Pumps with 10, 20 and 40 litres reservoir

| Sound Level (dBA) | Motor Size (kW) | Dimensions (mm) | | | | | | | Model Number |
|----------------------|--------------------|-----------------|-----|-----|-----|-----|-----|------|------------------------|
| | | A | B | C | D | E | H | (kg) | |
| 80 - 95 | 3,0 | 295 | 142 | 279 | 152 | — | 429 | 27 | ZA4004NX ²⁾ |
| 80 - 95 | 3,0 | 295 | 142 | 279 | 152 | — | 429 | 30 | ZA4204MX |
| 80 - 95 | 3,0 | 356 | 203 | 279 | 205 | — | 490 | 34 | ZA4308MX |
| 80 - 95 | 3,0 | 330 | 180 | 414 | 421 | 500 | 467 | 51 | ZA4610MX |
| 80 - 95 | 3,0 | 295 | 142 | 279 | 152 | — | 429 | 31 | ZA4404MX |
| 80 - 95 | 3,0 | 356 | 203 | 279 | 205 | — | 490 | 35 | ZA4408MX |
| 80 - 95 | 3,0 | 305 | 155 | 419 | 305 | 384 | 442 | 40 | ZA4810MX |
| 80 - 95 | 3,0 | 330 | 180 | 414 | 421 | 500 | 467 | 52 | ZA4420MX |
| 80 - 95 | 3,0 | 419 | 269 | 399 | 505 | 584 | 556 | 75 | ZA4440MX |

OIL FLOW VERSUS PRESSURE

at 7 bar air & 2000 l/min air consumption



ZG5-Series, Gasoline Hydraulic Pumps

ENERPAC 
POWERFUL SOLUTIONS. GLOBAL FORCE.

▼ Shown: ZG5420MX-R



- Features Z-Class high efficiency pump design, higher oil flow and bypass pressure
- Two-speed operation reduces cycle time for improved productivity
- User adjustable relief valve built-in on manual valves. Oil ports on valves are 3/8" NPTF
- Available in two 4-cycle engine sizes: 4,1 kW Honda and 4,8 kW Briggs & Stratton
- Full sight oil level glass on all reservoirs allow quick and easy oil level monitoring.

Z CLASS

**Tough, Dependable,
Innovative**



Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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ZG-Series, Gasoline Pump Performance

Elevation can affect the performance of any gasoline engine. ZG-Series pumps are designed to develop rated performance at elevations up to 1500 m. For applications above this elevation, please consult your Enerpac office.



User Adjustable Relief Valve

All VM-Series directional valves have a user adjustable relief valve to allow the operator to easily set the optimum working pressure.

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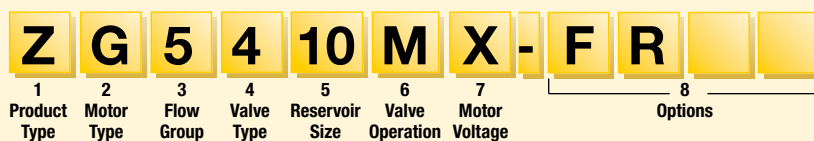
▼ SELECTION CHART

| Used with Cylinder | Usable Oil Capacity (litres) | Manual Valve ¹⁾ Model Number | Valve Function | Model Number with Roll Cage | Output Flow Rate (l/min) | | | | 4-Cycle Engine Type and Size |
|--------------------|---------------------------------|--|--------------------------|-----------------------------|-----------------------------|-----------|------------|------------|------------------------------|
| | | | | | at 7 bar | at 50 bar | at 350 bar | at 700 bar | |
| Single-Acting | 10 | VM33 | Advance / Hold / Retract | ZG5310MX-R | 11,5 | 10,7 | 1,8 | 1,6 | Honda 4,1 kW |
| | 20 | VM33 | Advance / Hold / Retract | ZG5320MX-R | 11,5 | 10,7 | 1,8 | 1,6 | |
| Double-Acting | 10 | VM43 | Advance / Hold / Retract | ZG5410MX-R | 11,5 | 10,7 | 1,8 | 1,6 | |
| | 20 | VM43 | Advance / Hold / Retract | ZG5420MX-R | 11,5 | 10,7 | 1,8 | 1,6 | |
| Single-Acting | 10 | VM33 | Advance / Hold / Retract | ZG5310MX-BR | 6,5 | 6,2 | 1,8 | 1,6 | Briggs & Stratton 4,8 kW |
| | 20 | VM33 | Advance / Hold / Retract | ZG5320MX-BR | 6,5 | 6,2 | 1,8 | 1,6 | |
| Double-Acting | 10 | VM43 | Advance / Hold / Retract | ZG5410MX-BR | 6,5 | 6,2 | 1,8 | 1,6 | |
| | 20 | VM43 | Advance / Hold / Retract | ZG5420MX-BR | 6,5 | 6,2 | 1,8 | 1,6 | |
| | 40 | VM43L | Advance / Hold / Retract | ZG5840MX-BR | 6,5 | 6,2 | 1,8 | 1,6 | |

¹⁾ See pages 110-112 for hydraulic symbols of these valves.

Gasoline Hydraulic Pumps

▼ This is how a ZG-Series pump model number is built up:



1 Product Type

Z = Pump Class

2 Prime Mover

G = Gasoline Engine

3 Flow Group

5 = 1,6 l/min @ 700 bar

6 = 3,3 l/min @ 700 bar (see page 106)

4 Valve Type

0 = No valve, with cover plate ¹⁾

2 = 3/2 manual valve **VM32**

3 = 3/3 manual valve **VM33**

4 = 4/3 manual valve **VM43**

6 = 3/3 manual locking valve **VM33L**
with pilot operated check

8 = 4/3 manual locking valve **VM43L**
with pilot operated check.

¹⁾ For remote valve mounting order

BSS1090 high pressure connecting plate.

5 Reservoir Size, useable oil

10 = 10 litres

20 = 20 litres

40 = 40 litres

6 Valve Operation

M = Manual valve

N = No valve

7 Motor Voltage

X = Not applicable

8 Factory installed options

B = Briggs & Stratton
gasoline engine

F = Return Line Filter

G = 1000 bar pressure gauge

N = No reservoir handles
(includes lifting eyes on
10, 20 and 40 litres)

R = Roll Cage

Ordering Example

Model Number: **ZG5420MX-FR**

This is a 700 bar hydraulic pump, with
a 4/3 manual valve, 20 litres reservoir,
with a 4,1 kW Honda gasoline engine
pump, return line filter and roll bar.

ZG5 Series



Reservoir Capacity:

10 - 20 - 40 litres

Flow at Rated Pressure:

1,6 l/min

Engine Size:

4,1 - 4,8 kW

Maximum Operating Pressure:

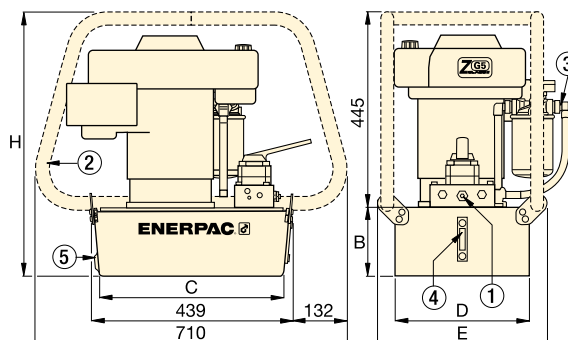
700 bar



High Pressure Hoses

Enerpac offers a complete
line of high quality hydraulic
hoses. To ensure the integrity
of your system, specify only
genuine Enerpac
hydraulic hoses.

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① User adjustable relief
valve on all manual
valves. 3/8" NPTF on A
and B ports; 1/4" NPTF
on auxiliary ports.

② Roll Bar

③ Return Line Filter

④ Oil Level Gauge

⑤ Oil Drain



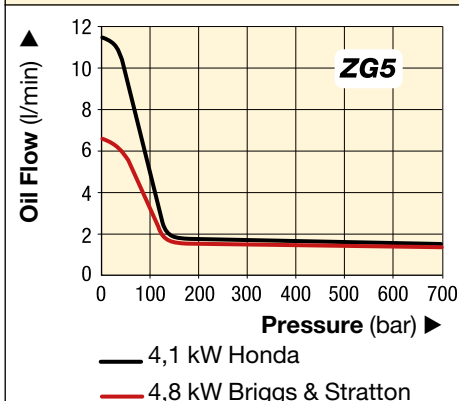
ZG6-Series 9,7 kW Pump

The ZG6-pump has 3,3 l/min
oil flow at 700 bar,
Briggs & Stratton 4-cycle
gasoline engine with electric
start and 12 Volt charge
output for accessories.

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| Relief Valve Adjustment Range | Sound Level | Dimensions (mm) | | | | | | Model Number with Roll Cage |
|-------------------------------------|----------------|-----------------|-----|-----|-----|-----|------|--------------------------------|
| | | B | C | D | E | H | (kg) | |
| 70 - 700 | 88 - 93 | 155 | 419 | 305 | 384 | 600 | 52 | ZG5310MX-R |
| 70 - 700 | 88 - 93 | 180 | 414 | 421 | 500 | 625 | 64 | ZG5320MX-R |
| 70 - 700 | 88 - 93 | 155 | 419 | 305 | 384 | 600 | 52 | ZG5410MX-R |
| 70 - 700 | 88 - 93 | 180 | 414 | 421 | 500 | 625 | 64 | ZG5420MX-R |
| 70 - 700 | 91 - 95 | 155 | 419 | 305 | 384 | 600 | 50 | ZG5310MX-BR |
| 70 - 700 | 91 - 95 | 180 | 414 | 421 | 500 | 625 | 63 | ZG5320MX-BR |
| 70 - 700 | 91 - 95 | 155 | 419 | 305 | 384 | 600 | 50 | ZG5410MX-BR |
| 70 - 700 | 91 - 95 | 180 | 414 | 421 | 500 | 625 | 63 | ZG5420MX-BR |
| 70 - 700 | 91 - 95 | 269 | 399 | 505 | 557 | 714 | 86 | ZG5840MX-BR |

OIL FLOW VERSUS PRESSURE



Gasoline Hydraulic Pump

ENERPAC 
POWERFUL SOLUTIONS. GLOBAL FORCE.

▼ Shown: ZG6440MX-BCFH



ZG6 Series

Reservoir Capacity:

40 litres

Flow at Rated Pressure:

3,3 l/min

Engine Size:

9,7 kW

Maximum Operating Pressure:

700 bar

Z Tough
Dependable
Innovative
CLASS

- Features Z-Class high efficiency pump design:
 - higher oil flow and bypass pressure
 - patented balanced rotating pump components to reduce vibration
 - replaceable piston check valves that increase service life of pump components
- Two-speed operation reduces cycle time for improved productivity
- Easy serviceable 9,7 kW, 4-cycle gasoline engine with electric start and 12 Volt charge output for accessories
- Dual forced air heat exchangers stabilizes hydraulic oil temperature
- Roll cage for easy portability and hoisting, protects pump
- Sturdy wheeled cart with collapsible handles
- Fullsight oil level-glass for easy oil level monitoring.



Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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Adjustable Pressure Relief Valve

ZG-Series pumps have a manual directional control valve with a user adjustable

relief valve to allow the operator to easily set the optimum working pressure. Relief valve adjustment range 70-700 bar. Oil ports are 3/8" NPTF.

▼ SELECTION CHART

| For use with cylinder | Usable Oil Capacity (litres) | Manual Control Valve Type | Valve Function | Model Number | Output Flow Rate (l/min) | | 4-Cycle Engine Size (kW) | Outside Dimensions L x B x H (mm) |  (kg) |
|-----------------------|------------------------------|---------------------------|----------------------|---------------|--------------------------|------------|--------------------------|-----------------------------------|--|
| | | | | | at 7 bar | at 700 bar | | | |
| Dbl-Act. | 40 | 4/3 | Advance/Hold/Retract | ZG6440MX-BCFH | 14,7 | 3,3 | 9,7 | 1205 x 840 x 935 | 152 |

PGM-Series, Gasoline Hydraulic Pumps

▼ Shown: **PGM-2408R**



- **Patented Genesis Technology means**
 - coaxial piston design ensures high performance
 - first-stage piston pump for improved efficiency
- **High by-pass pressures improve productivity**
- **All Atlas pumps feature sturdy roll cage for use in tough environments**
- **Four-cycle Honda motor 2,2 kW.**

PGM Series



Reservoir Capacity:

4 - 8 litres

Flow at Rated Pressure:

0,66 l/min

Motor Size:

2,2 kW

Maximum Operating Pressure:

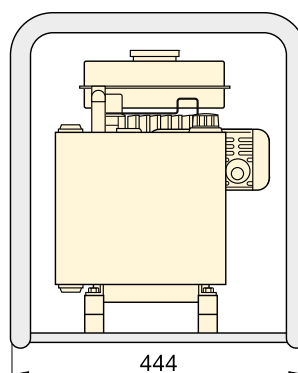
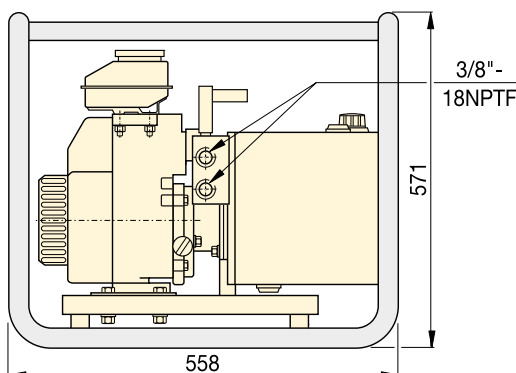
700 bar



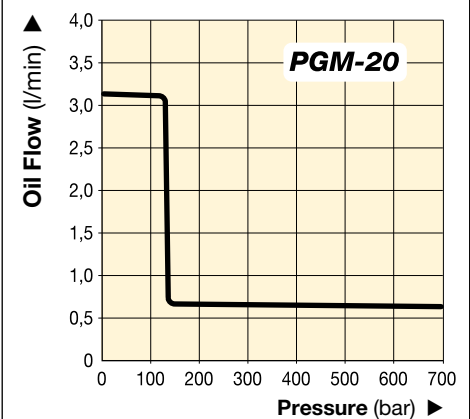
Hoses

Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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OIL FLOW VERSUS PRESSURE



| Used with Cylinder | Usable Oil Capacity (litres) | Model Number | Pressure Rating (bar) | Output Flow Rate (l/min) | | By-Pass Pressure (bar) | Manual Valve Type | Valve Function | Sound Level (dBA) | Weight (kg) |
|--------------------|------------------------------|--------------|-----------------------|--------------------------|-----------------------|------------------------|-------------------|--------------------------|-------------------|-------------|
| | | | | 1 st stage | 2 nd stage | | | | | |
| Single-Acting | 3,8 | PGM-2304R * | 700 | 3,2 | 0,66 | 140 | 3/3 | Advance / Hold / Retract | 89 | 25 |
| Double-Acting | 3,8 | PGM-2404R * | 700 | 3,2 | 0,66 | 140 | 4/3 | Advance / Hold / Retract | 89 | 25 |
| Single-Acting | 7,6 | PGM-2308R * | 700 | 3,2 | 0,66 | 140 | 3/3 | Advance / Hold / Retract | 89 | 33 |
| Double-Acting | 7,6 | PGM-2408R * | 700 | 3,2 | 0,66 | 140 | 4/3 | Advance / Hold / Retract | 89 | 33 |

* Note: The PGM-20 series are available with a carrying handle instead of a roll cage. For ordering omit the 'R' from the model number

Directional Control Valves

ENERPAC 
POWERFUL SOLUTIONS. GLOBAL FORCE.

Enerpac hydraulic valves are available in a wide variety of models and configurations.

Whatever your requirements... directional control, flow control, or pressure control... you can be sure that Enerpac has the correct valve to match your application exactly.

Designed and manufactured for safe operation up to 700 bar, the range of Enerpac valves allows for direct pump mounting, remote mounting, manual or solenoid actuation, and in-line installation, giving you flexible solutions to control your hydraulic system.



Pressure and Flow Control Valves

For more hydraulic system control with pressure relief valves, shut-off valves, check valves and sequence valves see our "System Components".

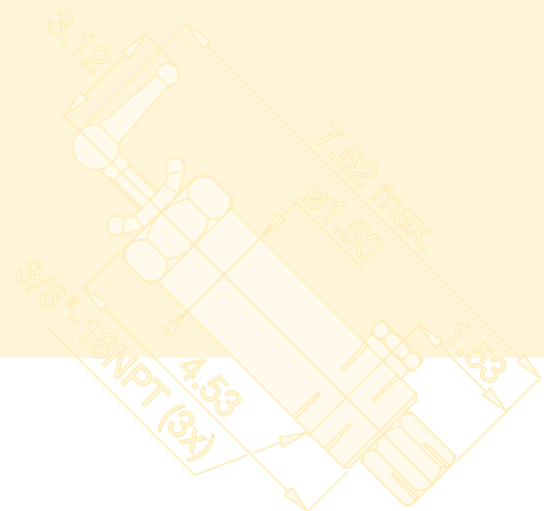
Page: 130



Valving Help

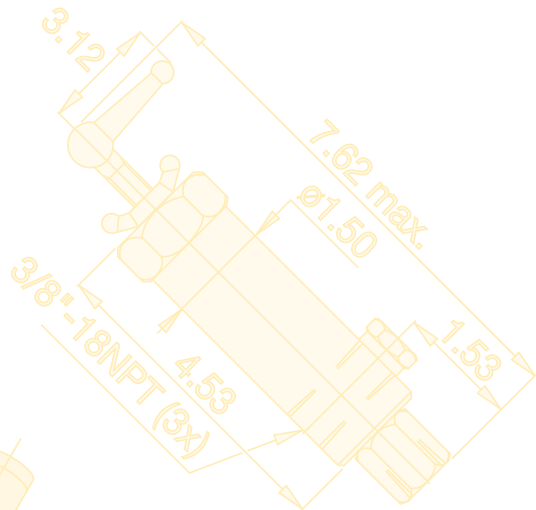
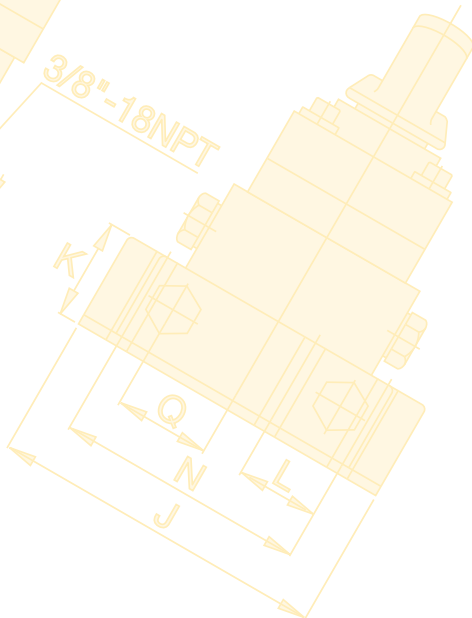
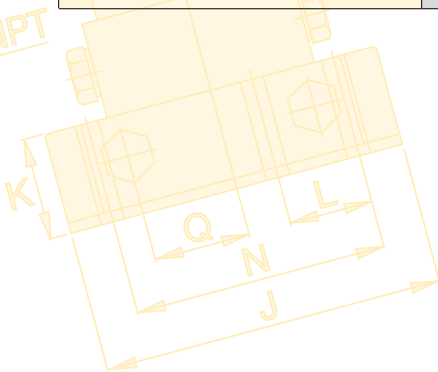
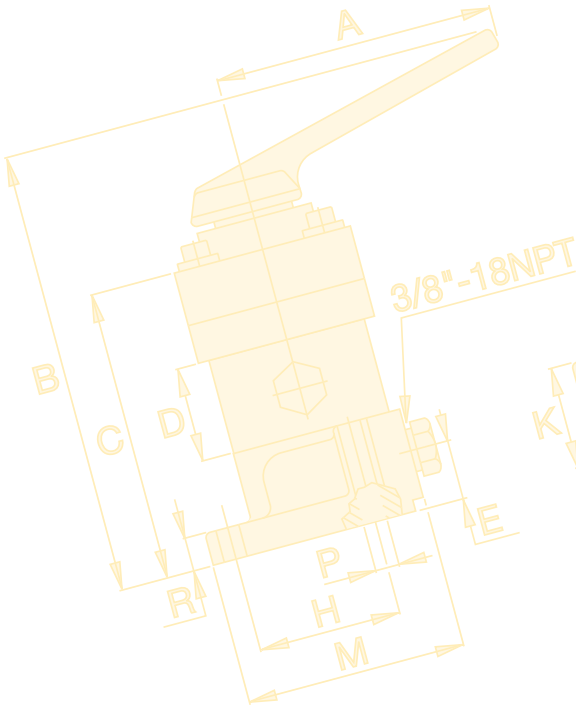
See Basic System Set-Up and Valve Information in our 'Yellow Pages'.

Page: 256



Directional Control Valves Section Overview

| Valve Type | Series | Page |
|---|----------------|-------|
| Pump Mounted Manual and Solenoid Directional Control Valves | VM VE | 110 ► |
| Remote Mounted Manual Directional Control Valves | VC | 112 ► |
| Valve Dimensions | VM VE VC | 113 ► |



▼ Shown from left to right: VM32, VE33, VM33, VM43L, VE43



- Advance/Retract and Advance/Hold/Retract operation of single-acting and double-acting cylinders and tools
- Manual or solenoid operation
- Pump mounting will retrofit on most Enerpac pumps
- Available “locking” option on VM Series valves for load-holding applications
- Standard “locking” feature on VE Series 3-position valves
- User adjustable relief valve allows the operator to easily set the working pressure.

▼ Enerpac wind turbine levelling system with a VM-33L manual valve, used to accurately level the transition piece after installation on the foundation pile.



Reliable Control of Single and Double-Acting Cylinders and Tools

| Valve Operation | Used with Cylinder | Valve Type | |
|-----------------|--------------------|---|--|
| Manual | Single-acting | 3-Way, 2-Position | |
| Manual | Single-acting | 3-Way, 3-Position, Tandem Center | |
| Manual | Double-acting | 4-Way, 3-Position, Tandem Center | |
| Manual | Single-acting | 3-Way, 3-Position, Tandem Center, Locking | |
| Manual | Double-acting | 4-Way, 3-Position, Tandem Center, Locking | |
| Solenoid 24 VDC | Single-acting | 3-Way, 2-Position | |
| Solenoid 24 VDC | Single-acting | 3-Way, 2-Position, Dump | |
| Solenoid 24 VDC | Single-acting | 3-Way, 3-Position, Tandem Center | |
| Solenoid 24 VDC | Double-acting | 4-Way, 3-Position, Tandem Center | |

For remote valve information, see page 112.

Pump Mounted Directional Control Valves



Adjustable relief valve

All valves feature several gauge ports for “system”, A port and B port pressure monitoring. User adjustable relief valves are included on all models to allow the operator to easily set the optimum working pressure for each application.

VM33 and VE43 valves include “System Check” feature, for more precise pressure holding and improved system control. The VM33 has improved porting which provides faster cylinder retraction while motor is running.

VM VE Series



Max. Flow Capacity:

17 l/min

Maximum Operating Pressure:

700 bar

| Model Number | Hydraulic Symbol | Schematic Flowpath | | | (kg) |
|--------------|------------------|--------------------|------|---------|------|
| | | Advance | Hold | Retract | |
| VM32 | | | | | 2,5 |
| VM33 | | | | | 3,0 |
| VM43 | | | | | 3,1 |
| VM33L | | | | | 4,8 |
| VM43L | | | | | 4,9 |
| VE32 | | | | | 3,9 |
| VE32D | | | | | 3,9 |
| VE33 | | | | | 9,3 |
| VE43 | | | | | 9,3 |

See page 113 for valve dimensions.



Fittings

For additional fittings see the fitting page of the System Components section in this catalogue.

Page: 121



Locking Valves

For applications that require positive load holding, VM-Series valves (except VM32 valve) are available with a pilot-operated check valve. This option provides hydraulic locking of the load until the valve is shifted into the retract position.



Pendants for VE-Series Solenoid Valves

When ordering Enerpac VE-Series solenoid valves, the pendant must be ordered separately for Z-Class. Pendant connection to be plugged into electric box of pump.

| To be used with solenoid valves: | Pendant Model Nr. |
|----------------------------------|-------------------|
| VE32D | ZCP-1 |
| VE32, VE33, VE43 | ZCP-3 |

Page: 91

▼ Shown from left to right: **VC-20**, **VC-4L**




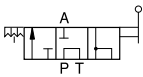
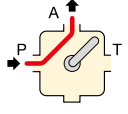
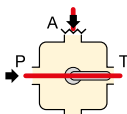
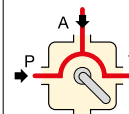
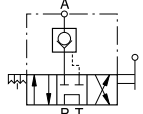
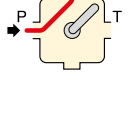
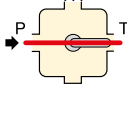
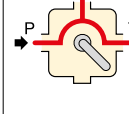
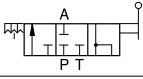
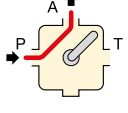
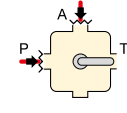
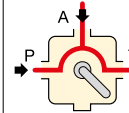
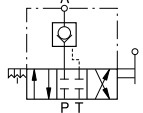
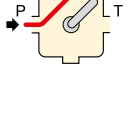
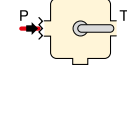
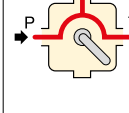
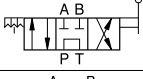
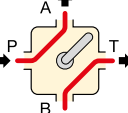
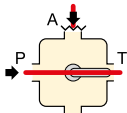
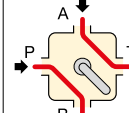
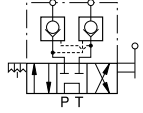
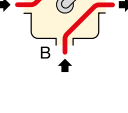
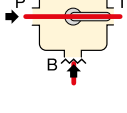
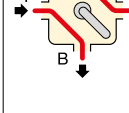
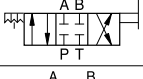
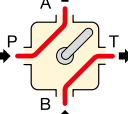
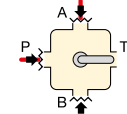
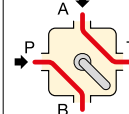
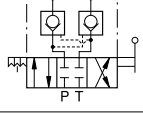
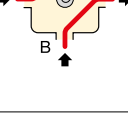
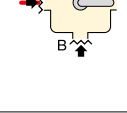
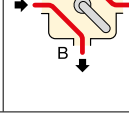
Remote Control of Single and Double-Acting Cylinders and Tools



Locking Valves

For applications that require positive load holding, VC-Series valves are available with a pilot-operated check valve. This option provides hydraulic locking of the load until the valve is shifted into the retract position.

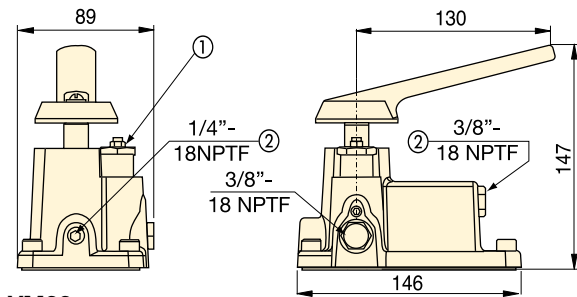
- Advance/Hold/Retract operation for use with single-acting or double-acting cylinders and tools.

| Valve Operation | Used with Cylinder | Valve Type | Model Number | Hydraulic Symbol | Schematic Flowpath | | |  (kg) |
|-----------------|--------------------|---|---------------|---|--|---|---|---|
| | | | | | Advance | Hold | Retract | |
| Manual | Single-Acting | 3-Way, 3-Position, Tandem Center | VC-3 |  |  |  |  | 2,9 |
| Manual | Single-Acting | 3-Way, 3-Position, Tandem Center, Locking | VC-3L |  |  |  |  | 4,7 |
| Manual | Single-Acting | 3-Way, 3-Position, Closed Center | VC-15 |  |  |  |  | 2,9 |
| Manual | Single-Acting | 3-Way, 3-Position, Closed Center, Locking | VC-15L |  |  |  |  | 4,7 |
| Manual | Double-Acting | 4-Way, 3-Position, Tandem Center | VC-4 |  |  |  |  | 2,9 |
| Manual | Double-Acting | 4-Way, 3-Position, Tandem Center, Locking | VC-4L |  |  |  |  | 4,7 |
| Manual | Double-Acting | 4-Way, 3-Position, Closed Center | VC-20 |  |  |  |  | 2,9 |
| Manual | Double-Acting | 4-Way, 3-Position, Closed Center, Locking | VC-20L |  |  |  |  | 4,7 |

Return line kit included with remote valves.

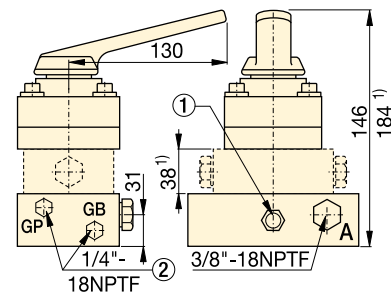
Directional Control Valves Dimensions

Pump Mounted Directional Control Valves



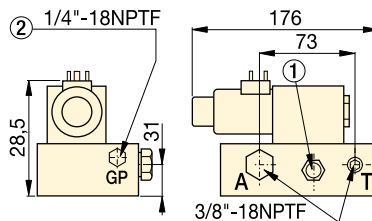
VM32

- ① User Adjustable Relief Valve
- ② Auxiliary Port

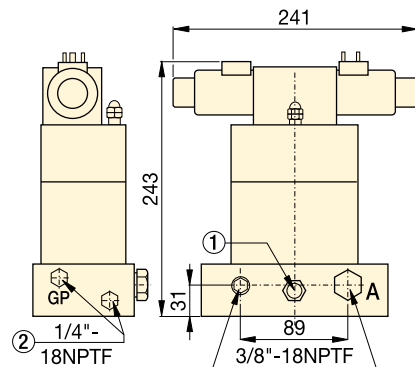


VM33, VM33L, VM43, VM43L

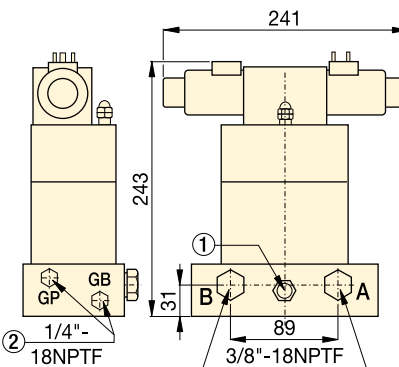
¹⁾ VM33L and VM43L only



VE32D

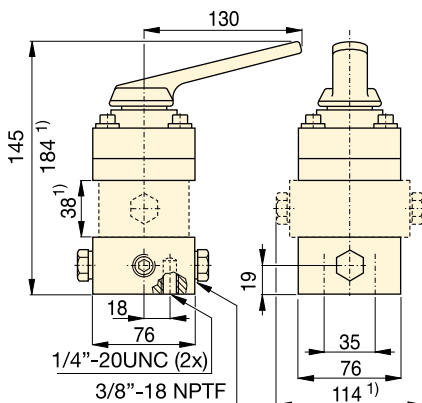


VE33



VE43

Remote Manual Directional Control Valves



VC-3, VC-3L, VC-15, VC-15L

VC-4, VC-4L, VC-20, VC-20L

¹⁾ VC-3L, VC-15L, VC-4L and VC-20L only

VM VE VC Series



Max. Flow Capacity:

17 l/min

Maximum Operating Pressure:

700 bar



Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the System Components Section for a full range of gauges.

to the System Components Section for a full range of gauges.

Page: **124**



Fittings

For additional fittings see the fitting page of the System Components section in this catalogue.

Page: **121**



Valving Help

See Basic System Set-Up and Valve Information in our 'Yellow Pages'.

Page: **256**

System Components & Valves

Enerpac System Components:

All the additional elements you need to complete your high pressure hydraulic system and get started.

Engineered to work with your Enerpac cylinders, pumps and tools, all Enerpac components are designed to the most exacting standards.

With this complete line of hydraulic hoses, couplers, fittings, manifolds, oil and gauges, Enerpac has the accessories to complement your system and ensure the efficient operation, long life and safety of your hydraulic equipment.



Yellow Pages

For sample system set-ups and how to correctly specify your system components, please view the Enerpac "Yellow Pages" section in this catalogue.

Page:

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Maintain System Integrity

Use Enerpac System Components, designed to interface with Enerpac cylinders, pumps and tools to ensure your system operates at peak performance.



System Components & Control Valves Overview

| Component Type | Series | Page |
|---|------------------|--|
| Hoses | H700 |  116 ▶ |
| Couplers | A, C, F, T |  118 ▶ |
| Hydraulic Oil | HF |  120 ▶ |
| Manifolds | A |  120 ▶ |
| Control Manifolds | AM |  120 ▶ |
| Fittings | BFZ FZ XSC |  121 ▶ |
| Force Gauges Pressure Gauges | GF GP |  122 ▶ |
| Pressure Gauges, glycerine filled Pressure Gauges, dry | G H |  124 ▶ |
| Test System Gauges | T |  126 ▶ |
| Digital Pressure Gauges | DGR |  127 ▶ |
| Gauge Adaptor Assembly | GA45 |  128 ▶ |
| Gauge Accessories | GA NV V |  129 ▶ |
| Pressure and Flow Control Valves | V |  130 ▶ |

H700-Series, High Pressure Hoses

▼ Shown: HC-7206



Thermo-Plastic Safety Hoses (700-Series)

- For demanding applications, featuring a 4:1 safety factor
- Maximum working pressure of 700 bar
- Outside jacket is polyurethane, to provide maximum abrasion resistance
- Exhibits low volumetric expansion under pressure to enhance overall system efficiency
- Crimped-on rubber strain relief for improved life and durability on all models.

▼ To prevent back pressure and to increase cylinder retraction speed, when using long hoses with single-acting cylinders, the Enerpac HC-7300-Series of hoses with increased internal diameter is the best choice.



Safety and Quality



To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

WARNING !

- Do not exceed 700 bar maximum pressure.
- Do not handle hoses which are under pressure.

More safety instructions in our 'Yellow pages'.

Page: 246

▼ Hose End Couplings

| | |
|-----------|---|
| 1/4" NPTF |  |
| 3/8" NPTF |  |
| A-604 |  |
| A-630 |  |
| AH-604 |  |
| AH-630 |  |
| C-604 |  |
| CH-604 |  |

High Pressure Hydraulic Hoses

H700 Series



Inside Diameter:


6,4 - 9,7 mm

Length:

0,6 - 15 m

Maximum Operating Pressure:

700 bar

| Internal Diameter (mm) | Hose End Assemblies and Couplers * | | Hose Length (m) | Model Number |  (kg) |
|---------------------------|------------------------------------|-----------|--------------------|--------------|---|
| | End one | End two | | | |
| 6,4 | 1/4" NPTF | | — | — | — |
| | | | — | — | — |
| | | A-630 | 1,8 | HB-7206QB | 1,1 |
| | | | — | — | — |
| | 3/8" NPTF | CH-604 | 1,8 | HC-7206Q | 1,0 |
| | | | 0,6 | H-7202 | 0,5 |
| | | | 0,9 | H-7203 | 0,7 |
| | | | 1,8 | H-7206 | 0,9 |
| | | | 3,0 | H-7210 | 1,4 |
| | | | 6,1 | H-7220 | 2,8 |
| | | | 9,1 | H-7230 | 4,5 |
| | | | 15 | H-7250 | 7,0 |
| | | A-604 | — | — | — |
| | | | 1,8 | HA-7206B | 1,1 |
| | | | — | — | — |
| | | AH-604 | — | — | — |
| | | | — | — | — |
| | | | 1,8 | HA-7206 | 1,0 |
| | | | 3,0 | HA-7210 | 1,5 |
| | | AH-630 | 1,8 | HB-7206 | 1,0 |
| | | C-604 | 0,9 | HC-7203B | 1,0 |
| | | | 1,8 | HC-7206B | 1,3 |
| | | | 3,0 | HC-7210B | 1,8 |
| | | CH-604 | 0,9 | HC-7203 | 0,8 |
| | | | 1,8 | HC-7206 | 1,0 |
| | | | 3,0 | HC-7210 | 1,5 |
| | | | 6,1 | HC-7220 | 2,9 |
| 9,7 | 3/8" NPTF | CH-604 | 1,8 | HC-7206C | 1,1 |
| | | | 15 | HC-7250C | 7,0 |
| | | | 1,8 | H-7306 | 1,6 |
| | | | — | — | — |
| | | | 3,0 | H-7310 | 2,4 |
| | | 3/8" NPTF | 6,1 | H-7320 | 4,5 |
| | | | 9,1 | H-7330 | 7,3 |
| | | | 15 | H-7350 | 11,5 |
| | | | 1,8 | HC-7306 | 1,7 |
| | | | 3,0 | HC-7310 | 2,5 |
| | | CH-604 | 6,1 | HC-7320 | 5,1 |

* For technical information on couplers see next page.



Torque Wrench Hoses

Use Enerpac twin safety hoses with double-acting wrenches to ensure the integrity of your hydraulic system.

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Fittings

For additional fittings see the fitting page of the System Components section.

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Hose Oil Capacity

When using greater hose lengths, it is sometimes necessary to fill the pump reservoir after filling the hoses. To determine the hose oil capacity, use the following:

For 6,4 mm inside diameter hoses:
Capacity (cm³) = 32,1699 x Length (m)

For 9,7 mm inside diameter hoses:
Capacity (cm³) = 73,8981 x Length (m)

A, C, F, T-Series, Hydraulic Couplers

ENERPAC 
POWERFUL SOLUTIONS. GLOBAL FORCE.

▼ Shown: FH-604, FR-400, AR-630, C-604, AH-604, AR-400



3/8" High Flow Couplers

- Standard equipment on most Enerpac cylinders
- Recommended for use on all Enerpac pumps and cylinders where space and porting permits
- Includes "2-in-1" dust cap for use on male and female couplers

3/8" High Pressure 'Flush-face' Couplers

- Featuring "Push-to-connect" operation, to guarantee good connection every time
- Flush-face, zero-leak operation for minimal spillage
- HTMA* recognized for safety and performance
- Will not interchange with low pressure couplers

3/8" Regular Spee-D-Couplers®

- For medium duty applications with hand pumps
- Includes female aluminium dust cap

1/4" Regular Couplers

- For use with small cylinders and hand pumps
- Includes female aluminium dust cap

1/4" Spin-on Torque Wrench Couplers

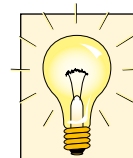
- For use with 700 bar S and W-Series torque wrenches, THQ-Series hoses and 700 bar torque wrench pumps

1/4" Lock-ring Torque Wrench Couplers

- For use with 800 bar HXD and SQD-Series torque wrenches, THC-Series hoses and 800 bar torque wrench pumps.

* Hydraulic Tool Manufacturers Association.

Quick Connection of Hydraulic Lines



Thread sealer

To seal NPTF threads use one of the new anaerobic thread sealers or Teflon paste.

When using Teflon Tape, apply the tape one thread from the end of a fitting to prevent it from winding up in the hydraulic system.



WARNING!

Couplers should be pressurized only when completely connected and should not be coupled or uncoupled when pressurized.

More safety instructions in our 'Yellow Pages'.

Page: 246



F-Series

Flush-faced couplers provide reduced pressure drop versus other types and are preferred in dirty, grimy construction and mining environments due to easy clean, non-dirt trapping faces.

▼ With the use of Enerpac high flow couplers, hoses are easily installed for multiple hydraulic line connections in this 34 points PLC-controlled lifting system.



Hydraulic Couplers



CT-604 Safety Tool

Use the Enerpac CT-604 to relieve hydraulic back pressure by safely bleeding the hydraulic coupler.

NOTE: For use on C-Series 700 bar High-Flow Couplers only

Minimize injuries from projectile parts and under-skin hydraulic fluid injections by eliminating unsafe coupler bleeding practices. The CT-604 is Enerpac-engineering safe for use at 700 bar.

A, C, F, T Series



Maximum Flow Capacity:

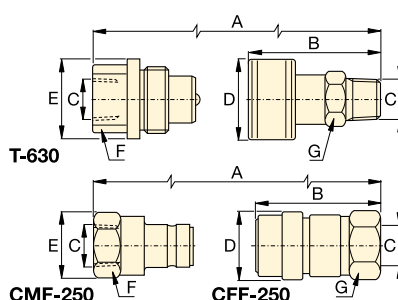
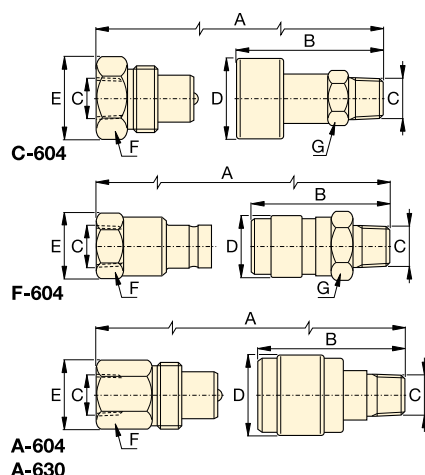
6,1 - 40,0 l/min

Thread:

1/4" - 3/8" NPTF

Maximum Operating Pressure:

700 - 800 bar




Metal Dust Caps

Steel dust caps are available for the C-604 series couplers.

Order model number:

CD-411M for female half

CD-415M for male half

| Maximum Flow Capacity (l/min) | Coupler Type | Model Numbers | | | Dimensions (mm) | | | | | | | Dust Cap(s) Modelnr. |
|-------------------------------|--|---------------|-------------|-----------|-----------------|----|-----------|----|----|----|----|----------------------|
| | | Complete Set | Female Half | Male Half | A* | B | C | D | E | F | G | |
| 35 | 700 bar High-Flow Coupler  | C-604 | CR-400 | CH-604 | 83 | 64 | 3/8" NPTF | 35 | 36 | 32 | 25 | (2x) CD-411 |
| 40 | 700 bar Flush-Face coupler  | F-604 | FR-400 | FH-604 | 111 | 72 | 3/8" NPTF | 31 | 31 | 27 | 29 | - |
| 7,6 | 700 bar Regular Spee-D-Coupler®  | A-604 | AR-400 | AH-604 | 77 | 42 | 3/8" NPTF | 28 | 26 | 23 | 19 | Z-410 female only |
| 7,6 | 700 bar Regular Coupler  | A-630 | AR-630 | AH-630 | 66 | 35 | 1/4" NPTF | 22 | 20 | 19 | 15 | Z-640 female only |
| 11,4 | 700 bar Spin-on Coupler  | T-630 | TR-630 | TH-630 | 73 | 60 | 1/4" NPTF | 29 | 29 | 19 | 21 | - |
| 6,1 | 800 bar Lock-ring Coupler  | - | CFF-250 | CMF-250 | 76 | 58 | 1/4" NPTF | 23 | 28 | 24 | 22 | - |

* Value A is total length when male and female half are connected.

▼ Shown: **HF-95T, HF-95X, HF-95Y**



The Genuine Range

Hydraulic Oil


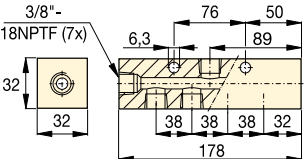
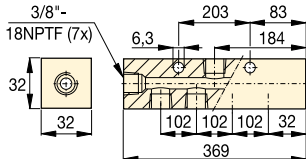

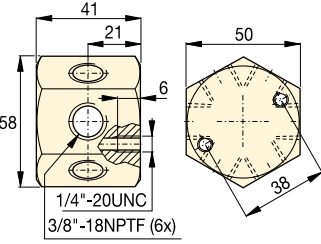

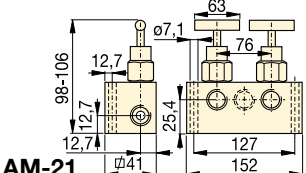
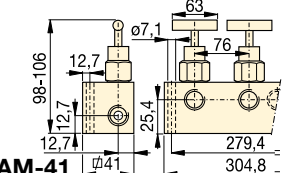
| | | |
|-----------------|---------------------|--|
| Contents | Model Number | Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void. |
| 1 litre | HF-95X | |
| 5 litres | HF-95Y | |
| 20 litres | HF-95T | |

▼ OIL SPECIFICATION CHART

| | |
|---------------------------|-----------|
| Viscosity Index | 100 min |
| Viscosity (cSt @ 40 °C) | 32 |
| API Gravity | 31-33 |
| Density (cSt @ 15 °C) | 875 |
| Flash point | 204 °C |
| Pour point | 32 °C |
| Colour | Blue |
| Working Temperature Range | 0 - 60 °C |
| Ideal working temperature | 40 °C |

- **Maximum pump volumetric efficiency**
- **Maximum internal heat transfer**
- **Prevents pump cavitation**
- **Additives prevent rust, oxidation and sludge**
- **High viscosity index**
- **Maximum film protective lubricity.**

Manifolds

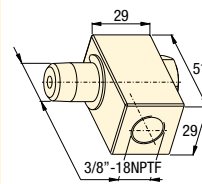
| Description | | Model Number | Dimensions (mm) |
|--|---|--------------|---|
| 7-port Manifold, short |  | A-64 |  |
| 7-port Manifold, long allows direct mounting of control valves to the manifold. | | A-65 |  |
| 6-port Manifold, hexagon Plugs furnished for all ports $\frac{3}{8}$ "-18 NPTF. |  | A-66 |  |
| Control Manifolds For control of two or four single-acting cylinders simultaneously. AM-21 with 5 ports $\frac{3}{8}$ "NPTF. AM-41 with 7 ports $\frac{3}{8}$ "NPTF. |  | AM-21 |  |
| | | AM-41 |  |

Hydraulic Oil, Manifolds and Fittings




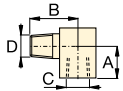

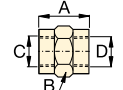

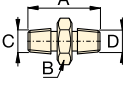

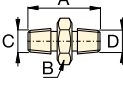

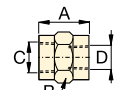

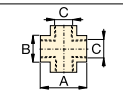

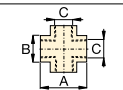

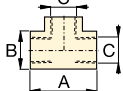

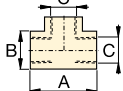

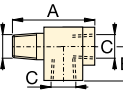

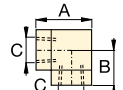

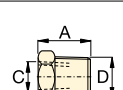

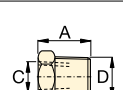

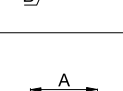

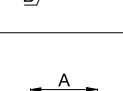

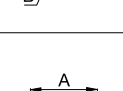

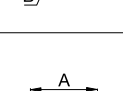

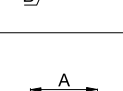

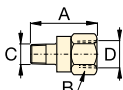

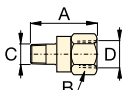
3/8" Swivel Connector

360 degree swivel coupler for optimal orientation of the hydraulic connection on cylinders, pumps and hoses. Order Model Nr. **XSC-1**.



**A, AM
BFZ
FZ
HF
Series**



| 700 bar Fittings | | | Model Number | Dimensions (mm) | | Series | | | |
|---------------------------|-----------|--|---|------------------|----|--------|--------------|--------------|---|
| | | | | A | B | C | D | | |
| Street Elbow | | |  | FZ-1616 | 23 | 33 | 3/8"-18 NPTF | 3/8"-18 NPTF |  |
| From: 3/8"-NPTF Male | | | | | | | | | |
| To: 3/8"-NPTF Female | | | | | | | | | |
| Reducing Connector | | |  | FZ-1615 | 28 | 25 | 3/8"-18 NPTF | 1/4"-18 NPTF |  |
| From: 3/8"-NPTF Female | | | | | | | | | |
| To: 1/4"-NPTF Female | | | | | | | | | |
| From: 1/2"-NPTF Female | | |  | FZ-1625 | 47 | 29 | 1/2"-14 NPTF | 3/8"-18 NPTF |  |
| To: 3/8"-NPTF Female | | | | | | | | | |
| Hexagon Nipple | | |  | FZ-1608 | 38 | 16 | 1/4"-18 NPTF | 1/4"-18 NPTF |  |
| From: | To: | | | | | | | | |
| 1/4"-NPTF | 1/4"-NPTF | | | | | | | | |
| 3/8"-NPTF | 3/8"-NPTF | | | | | | | | |
| 3/8"-NPTF | 3/8"-NPTF | | | | | | | | |
| Coupling | | |  | FZ-1614 | 29 | 23 | 3/8"-18 NPTF | 3/8"-18 NPTF |  |
| From: | To: | | | | | | | | |
| 3/8"-NPTF | 3/8"-NPTF | | | | | | | | |
| 1/4"-NPTF | | |  | FZ-1605 | 29 | 19 | 1/4"-18 NPTF | 1/4"-18 NPTF |  |
| 1/4"-NPTF | | | | | | | | | |
| Cross | | |  | FZ-1613 | 45 | 25 | 3/8"-18 NPTF | - |  |
| From: 3/8"-NPTF Female | | | | | | | | | |
| To: 3/8"-NPTF Female | | | | | | | | | |
| Tee | | |  | FZ-1612 | 45 | 25 | 3/8"-18 NPTF | - |  |
| From: | To: | | | | | | | | |
| 3/8"-NPTF | 3/8"-NPTF | | | | | | | | |
| 1/4"-NPTF | | |  | FZ-1637 | 45 | 24 | 1/4"-18 NPTF | - |  |
| 1/4"-NPTF | | | | | | | | | |
| Street Tee | | |  | BFZ-16312 | 56 | 26 | 3/8"-18 NPTF | 3/8"-18 NPTF |  |
| From: 3/8"-NPTF Female | | | | | | | | | |
| To: 3/8"-NPTF Male | | | | | | | | | |
| Elbow | | |  | FZ-1610 | 33 | 20 | 3/8"-18 NPTF | - |  |
| From: | To: | | | | | | | | |
| 3/8"-NPTF | 3/8"-NPTF | | | | | | | | |
| 1/4"-NPTF | | |  | FZ-1638 | 36 | 24 | 1/4"-18 NPTF | - |  |
| 1/4"-NPTF | | | | | | | | | |
| Reducer | | |  | FZ-1630 | 19 | 19 | 1/4"-18 NPTF | 3/8"-18 NPTF |  |
| From: | To: | | | | | | | | |
| 3/8"-NPTF | 1/4"-NPTF | | | | | | | | |
| 1/4"-NPTF | 1/2"-NPTF | | | | | | | | |
| 3/8"-NPTF | | |  | BFZ-16301 | 19 | 19 | G1/4" | 3/8"-18 NPTF |  |
| G1/4" | | | | | | | | | |
| G1/4" | | | | | | | | | |
| G1/4" | | |  | BFZ-16421 | 31 | 19 | 1/8"-27 NPTF | G1/4" |  |
| G3/8" | | | | | | | | | |
| G3/8" | | | | | | | | | |
| G3/8" | | | | | | | | | |
| Adaptor | | |  | BFZ-16323 | 43 | 24 | 1/4"-18 NPTF | G3/8" |  |
| From: | To: | | | | | | | | |
| G1/4" | 1/4"-NPTF | | | | | | | | |
| G1/4" | 1/8"-NPTF | | | | | | | | |
| G3/8" | | |  | BFZ-16324 | 43 | 24 | 3/8"-18 NPTF | G3/8" |  |
| G3/8" | | | | | | | | | |
| G3/8" | | | | | | | | | |
| Adaptor | | |  | FZ-1055 | 44 | 23 | 1/4"-18 NPTF | 3/8"-18 NPTF |  |
| From: | To: | | | | | | | | |
| 1/4"-NPTF | 3/8"-NPTF | | | | | | | | |
| 1/4"-NPTF | 1/8"-NPTF | | | | | | | | |
| 1/2"-NPTF | | |  | FZ-1642 | 30 | 19 | 1/8"-27 NPTF | 1/4"-18 NPTF |  |
| 3/8"-NPTF | | | | | | | | | |
| 3/8"-NPTF | | | | | | | | | |
| Swivel Fitting | | |  | FZ-1660 | 40 | 22 | 3/8"-18 NPTF | 3/8"-18 NPTF |  |
| From: 3/8"-NPTF Male | | | | | | | | | |
| To: 3/8"-NPTF Female | | | | | | | | | |

Hydraulic Force & Pressure Gauges

▼ Shown from left to right: GF-230B, GF-835B, GP-10S



- **GF-series gauges:** calibrated with dual scale reading for pressure and force in bar and kN
- **GF-series gauges:** all pressure sensing parts are sealed and dampened by glycerine for long life
- **GP-series gauges:** calibrated with dual scale reading for pressure in bar and psi
- **Excellent readability:** gauge face dimensions 100 mm
- **Fast, easy installation**
- **Stainless steel gauge cases for corrosion resistance.**

▼ A GP-10S gauge is used on this press to check the hydraulic pressure required to bend flat steel bar.



Visual Reference for System Pressure and Force



Auto-Damper Valve V-10

For automatic control of gauge fluctuations, the V-10 Auto-Damper Valve controls the movement of the gauge needle by restricting oil flow in and out of the gauge. No adjustments needed.

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Snubber Valve V-91

Infinitely adjustable for metering oil out of a gauge. The V-91 Snubber Valve is also suitable as a shut-off valve to protect the gauge during high cycle applications.

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Used With

| | |
|--|------------------------------|
|  | All Cylinders |
| | All Cylinders |
| | All 5 ton Cylinders |
| | All 10 ton Cylinders |
| | All 25 ton RC-Cylinders |
| | All 50 ton RC, RR-Cylinders |
| | 13 ton RCH-Series |
| | RCS-201, 302 |
| | RCS-502, 1002 |
| | RCH-202, 302, 603 |
|  | All 25, 30, 50 ton cylinders |
| | All 75, 100 ton cylinders |
| | All 150, 200 ton cylinders |
| | 10 ton VLP Presses |
| | 25 ton XLP Presses |
| | 50 ton XLP, BPR Presses |
| | 100 ton VLP, BPR Presses |
| | 200 ton VLP, BPR Presses |

Hydraulic Force & Pressure Gauges



Maximum Indicator Pointer

Indicator retains peak readings of pressure or force generated by the system.

Can easily be installed on GP and H-Series gauges.
Order model nr: **BSA-881**.



Pressure Gauges

To measure the input pressure into cylinders or high pressure systems. Also for all testing applications.

Force Gauges

To measure external load supported by a cylinder or jack in kN. For pressing parts together under pre-determined loads, weighing, testing, etc.

GP-Series are dry gauges.

GF-Series are glycerine filled gauges.

GF GP Series



Pressure Range:

0 - 1000 bar

Force Range:

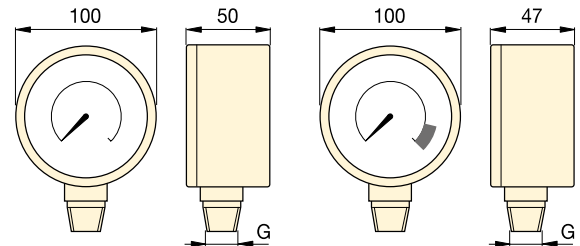
0 - 2000 kN

Gauge Face Diameter:

100 mm




Accuracy, % of full scale:

± 1%



GP-serie

GF-serie

| | Gauge Type and Calibration | | | | Units per Division | Model Number * | Thread G | Gauge Adaptor | | |
|---|---|----------|---|---------------|--------------------|----------------|----------|--|------|------|
| |  | |  | | | | |  129 | | |
| | | | | | | | | Required | | |
| | bar | psi | bar | kN | | | | GA-1 | GA-2 | GA-3 |
| | 0-700 | 0-10.000 | – | – | 10 bar, 100 psi | GP-10S | ½" NPTF | ● | ● | |
| | 0-1000 | 0-15.000 | – | – | 10 bar, 200 psi | GP-15S | ½" NPTF | ● | ● | |
| | – | – | 0-700 | 0-45 | 10 bar, 0,5 kN | GF-5B | ½" NPTF | ● | ● | |
| | – | – | 0-700 | 0-100 | 10 bar, 1 kN | GF-10B | ½" NPTF | ● | ● | |
| | – | – | 0-700 | 0-232 | 10 bar, 2 kN | GF-20B | ½" NPTF | ● | ● | |
| | – | – | 0-700 | 0-500 | 10 bar, 5 kN | GF-50B | ½" NPTF | ● | ● | |
| | – | – | 0-700 | 0-124 | 10 bar, 1 kN | GF-120B | ½" NPTF | ● | ● | |
| | – | – | 0-700 | 0-175/275 | 10 bar, 2 + 5 kN | GF-230B | ½" NPTF | ● | ● | |
| | – | – | 0-700 | 0-450/900 | 10 bar, 5 + 10 kN | GF-510B | ½" NPTF | ● | ● | |
| | – | – | 0-700 | 0-210/320/570 | 10 bar, 5 kN | GF-813B | ¼" NPTF | | | ● |
| | – | – | 0-700 | 0-232/300/500 | 10 bar, 5 kN | GF-835B | ¼" NPTF | | | ● |
| | – | – | 0-700 | 0-720/930 | 10 bar, 10 kN | GF-871B | ¼" NPTF | | | ● |
| | – | – | 0-700 | 0-1400/2000 | 10 bar, 25 kN | GF-200B | ¼" NPTF | | | ● |
| | | – | – | 0-700 | 0-100 | 10 bar, 1 kN | GF-10B | ½" NPTF | ● | ● |
| – | | – | 0-700 | 0-232 | 10 bar, 2 kN | GF-20B | ½" NPTF | ● | ● | |
| – | | – | 0-700 | 0-500 | 10 bar, 5 kN | GF-50B | ½" NPTF | ● | ● | |
| – | | – | 0-700 | 0-720/930 | 10 bar, 10 kN | GF-871B | ¼" NPTF | | | ● |
| – | | – | 0-700 | 0-1400/2000 | 10 bar, 25 kN | GF-200B | ¼" NPTF | | | ● |

* GF-Series Force gauges with imperial scale reading (psi, lbs) are available by changing the suffix 'B' into 'P'.

▼ Shown from left to right: H4049L, G-2534R, G-4089L, G-2535L, G-4040L



Visual Reference of System Pressure

Glycerine Filled (G-Series)

- Dual scale reading calibrated in bar and psi
- All pressure sensing parts sealed and dampened by glycerine for long life
- Includes safety blow-out disk and pressure equalizing membrane
- Gauge snubbers or needle valves recommended for high cycle applications.

High Cycle Dry Gauges (H-Series)

- Dual scale reading calibrated in bar and psi
- Ideal for use in many applications, specifically for high cycle and harsh environments
- Gauge snubbers or needle valves recommended to shut off gauge when not in use.



GA45GC Gauge adaptor assembly

45° Angled gauge adaptor improves safe working conditions.

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Gauge adaptor

For easy gauge installation into almost any system, Enerpac offers a complete line of gauge adaptors.

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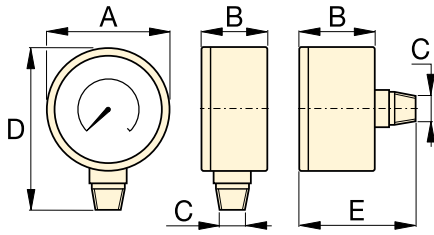
Snubber Valve V-91

Infinitely adjustable for metering oil out of a gauge. The V-91 Snubber Valve is also suitable as a shut-off valve to protect the gauge during high cycle applications.

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◀ When lifting or pressing, always use a gauge. A gauge is your 'window' to the system. It lets you see what's going on.

Hydraulic Pressure Gauges



| Size (mm) | Connection | Dimensions (mm) | | | | |
|--------------|-------------|-----------------|----|-----------|-----|----|
| | | A | B | C | D | E |
| 63 | Lower Mount | 63 | 37 | 1/4" NPTF | 84 | – |
| 63 | Center Rear | 63 | 37 | 1/4" NPTF | – | 63 |
| 100 | Lower Mount | 100 | 29 | 1/4" NPTF | 121 | – |
| 100 | Lower Mount | 100 | 49 | 1/2" NPTF | 136 | – |

Note: dimensions for reference only.

G H Series



Pressure Range:

0 - 1000 bar

Face Diameter:

63 - 100 mm

Accuracy, % of full scale:

± 1,0 - 1,5%



Maximum Indicator Pointer

Indicator retains peak readings of pressure or force generated by the system.

Can easily be installed on GP and H-Series gauges.

Order model nr: **BSA-881**.

▼ SELECTION CHART

| Gauge Series | Pressure Range | | Model Number | | | | Major Graduation | | Minor Graduation | | Major Graduation | | Minor Graduation | |
|--------------|----------------|----------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| | | | ø 63 ¼" NPTF Lower Mount | ø 63 ¼" NPTF Center Rear | ø 100 ¼" NPTF Lower Mount | ø 100 ½" NPTF Lower Mount | | | | | | | | |
| | | | | | | | bar | | | | psi | | | |
| | (bar) | (psi) | Accuracy: ± 1,5 % | | Accuracy: ± 1,0 % | | ø 63 | ø 100 | ø 63 | ø 100 | ø 63 | ø 100 | ø 63 | ø 100 |
| G-Series | 0-7 | 0-100 | G2509L | – | – | – | 1 | – | 0,01 | – | 10 | – | 2 | – |
| | 0-11 | 0-160 | G2510L | – | – | – | 1 | – | 0,02 | – | 10 | – | 2 | – |
| | 0-14 | 0-200 | G2511L | – | – | – | 1 | – | 0,02 | – | 50 | – | 5 | – |
| | 0-20 | 0-300 | G2512L | – | – | – | 5 | – | 0,50 | – | 50 | – | 5 | – |
| | 0-40 | 0-600 | G2513L | – | – | – | 10 | – | 1 | – | 100 | – | 10 | – |
| | 0-70 | 0-1.000 | G2514L | G2531R | – | – | 10 | – | 1 | – | 100 | – | 20 | – |
| | 0-140 | 0-2.000 | G2515L | – | – | – | 10 | – | 5 | – | 500 | – | 50 | – |
| | 0-200 | 0-3.000 | G2516L | – | – | – | 50 | – | 5 | – | 500 | – | 50 | – |
| | 0-400 | 0-6.000 | G2517L | G2534R | – | – | 100 | – | 10 | – | 1000 | – | 100 | – |
| | 0-700 | 0-10.000 | G2535L | G2537R | G4088L | G4039L | 100 | 100 | 10 | 10 | 2000 | 1000 | 200 | 100 |
| | 0-1000 | 0-15.000 | G2536L | G2538R | G4089L | G4040L | 100 | 100 | 20 | 20 | 3000 | 3000 | 200 | 200 |
| H-Series | 0-700 | 0-10.000 | – | – | H4049L | H4071L | – | 100 | – | 10 | – | 1000 | – | 100 |

Test System Gauges

▼ Gauge shown: **T-6003L**



- **Dual scale reading calibrated in bar and psi**
- **All gauges have spring-loaded backs with rubber blow-out plugs to protect case assembly in case of over-pressurization**
- **Integral maximum indicator pointer standard included**
- **2800 and 3500 bar models include flange mounting**
- **½" NPTF versions are made of high strength alloy steel**
- **0.25" cone models are made of 316 stainless steel, with 403 stainless steel on 2800 and 3500 bar models.**

▼ An Enerpac P-2282 hand pump equipped with a T-6011L test system gauge is used for proof pressure testing of hydraulic valves.



T Series

Pressure Range:
0 - 3500 bar

Face Diameter:
162 - 192 mm

Accuracy, % of full scale:
± 0,5 - 1,5%



Cone Mount Gauge Adaptor

Contains fittings to connect ¼" cone fitting gauge to ¾" cone system. Kit includes 43-301 tee, 43-704 gauge adaptor and 45-116 tubing. Order model number: **83-011**.

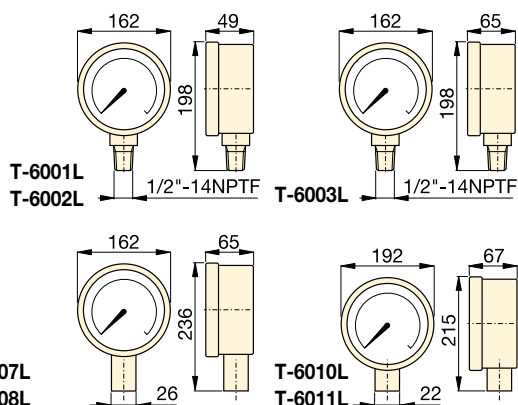
Page: **71**



Cone Mount Gauge Connector

For connecting gauges with 0.25" cone fitting directly to model number **11-100** or

11-400 pump (page 70). May be used with other 0.25" cone systems
Order model number: **43-704**



| Pressure Range | Pressure Range | Model Number | | Number Intervals | Graduation Intervals | Number Intervals | Graduation Intervals |
|----------------------|----------------|---------------------|---------------------------|------------------|----------------------|------------------|----------------------|
| | | Alloy Steel ½" NPTF | Stainless Steel 0,25 cone | | | | |
| (bar) | (psi) | | | (bar) | (bar) | (psi) | (psi) |
| 0-70 ¹⁾ | 0-1000 | T-6001L | — | 10 | 1 | 100 | 10 |
| 0-350 ¹⁾ | 0-5000 | T-6002L | — | 50 | 5 | 500 | 50 |
| 0-700 ¹⁾ | 0-10.000 | T-6003L | T-6007L | 100 | 10 | 1.000 | 100 |
| 0-1400 ¹⁾ | 0-20.000 | — | T-6008L | 200 | 20 | 1.000 | 100 |
| 0-2800 ²⁾ | 0-40.000 | — | T-6010L | 500 | 20 | 5.000 | 200 |
| 0-3500 ²⁾ | 0-50.000 | — | T-6011L | 500 | 50 | 5.000 | 200 |

¹⁾ Accuracy ± 0,5%

²⁾ Accuracy ± 1,5%

Digital Hydraulic Pressure Gauge

▼ Gauge shown: **DGR-2**



- Rated for system pressure up to 1380 bar
- Displays high pressure in bar, psi, MPa and kg/cm²
- Zero reset - ensures that gauge reads actual pressure
- IP65 protection
- 3 Volt battery included (type CR2430), condition indicator on read-out
- Shut-off slectable – menu driven
- Protective cover included.

DGR Series

Pressure Range:

0 - 1380 bar

Voltage:

3 Volt (battery)

Accuracy, % of full scale:

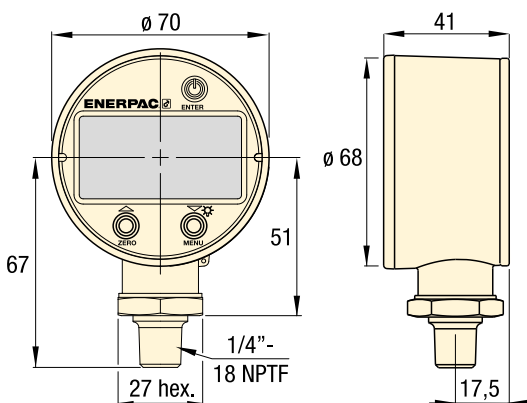
± 0,25%



Gauge adaptor

For easy gauge installation into almost any system, Enerpac offers a complete line of gauge adaptors.

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| High Pressure Rating (bar) | | High Pressure Rating (MPa) | | Model Number | High Pressure Rating (psi) | | High Pressure Rating (kg/cm ²) | |
|-------------------------------|----------|-------------------------------|----------|--------------|-------------------------------|----------|---|----------|
| Range | Interval | Range | Interval | | Range | Interval | Range | Interval |
| 0-1380 | 0,1 | 0-140 | 0,01 | DGR-2 | 0-20.000 | 1 | 0-1400 | 0,1 |

Weight: 0,23 kg.

Gauge Adaptor Assembly

ENERPAC 
POWERFUL SOLUTIONS. GLOBAL FORCE.

▼ Shown: **GA45GC**



GA45GC Series

Connection 1:
3/8" NPTF male

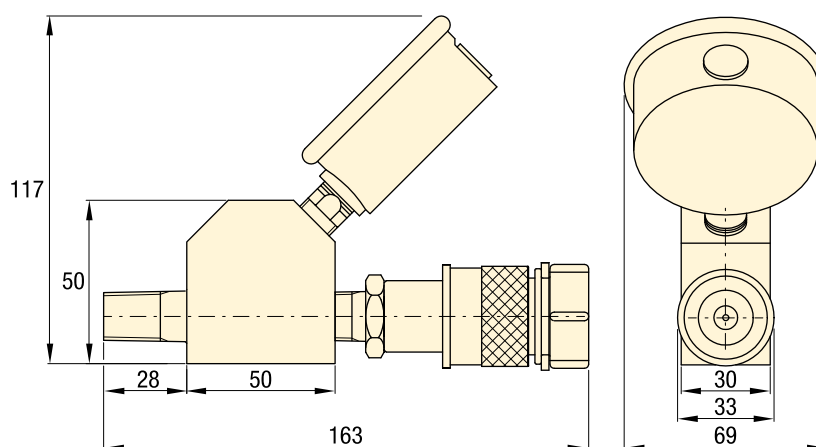
Connection 2:
CR-400 coupler

Operating Pressure:
700 bar

**45° Angled gauge
adaptor improves
safe working
conditions**

- 45° angled gauge improves visibility
- Slim and narrow design
- Easy to fit in a broad range of systems
- Maximize controlled load movement
- Glycerin dampened gauge with dual scale
- Enerpac High Flow female coupler.

▼ The Gauge Adaptor Assembly is the window to your system; allows easy reading of the pressure for safe operation.



| Model Number | Gauge Port (1/4" NPTF) | Male End (NPTF) | Female End (3/8" NPTF) | Gauge Range | |
|---------------|------------------------|-----------------|------------------------|-------------|------------|
| | | | | (bar) | (psi) |
| GA45GC | G2535L | 3/8" -18 | CR-400 | 0 - 700 | 0 - 10.000 |

Gauge Accessories

▼ Shown from left to right: **GA-3, V-91, GA-1, GA-2, GA-4, NV-251, GA-918**



GA, NV, V Series

Operating Pressure:
700 bar

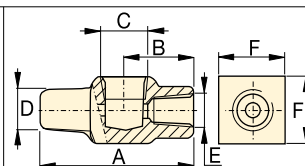
▼ A gauge is easily installed into your hydraulic system using a gauge adaptor.



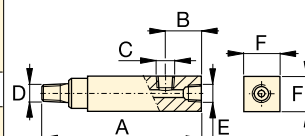
Gauge Adaptors (GA-Series)

- For easy mounting of a pressure gauge onto your system
- Male end screws into pump or cylinder port, female end accepts hose or coupler, 3rd port is for gauge connection
- GA-918 provides for swivel connection.

| Model Number | Gauge Port (NPTF) | Male End (NPTF) | Female End (NPTF) | Dimensions (mm) | | | | | |
|--------------|-------------------|-----------------|-------------------|-----------------|----|-----------|-----------|-----------|----|
| | | | | A | B | C | D | E | F |
| GA-1 | 1/2" | 3/8" | 3/8" | 71 | 31 | 1/2" NPTF | 3/8" NPTF | 3/8" NPTF | 32 |
| GA-2 | 1/2" | 3/8" | | 155 | 35 | 1/2" NPTF | 3/8" NPTF | 3/8" NPTF | 32 |
| GA-3 | 1/4" | 3/8" | | 133 | 48 | 1/4" NPTF | 3/8" NPTF | 3/8" NPTF | 32 |
| GA-4 | 1/2" | 1/4" | | 111 | 35 | 1/2" NPTF | 1/4" NPTF | 3/8" NPTF | 32 |



GA-1



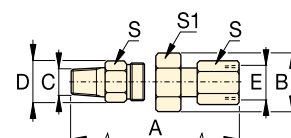
GA-2, GA-3, GA-4



Swivel Adaptor (GA-918)

- Simplifies gauge installation and reading.

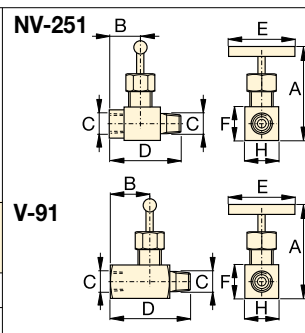
| Model Number | Dimensions (mm) | | | | | | |
|--------------|-----------------|----|-----------|------|-----------|----|----|
| | A | B | C | D | E | S | S1 |
| GA-918 | 117 | 43 | 1/2" NPTF | 28,5 | 1/2" NPTF | 29 | 38 |



Needle Valves (V- and NV-Series)

- Both NV-251 and V-91 provide positive shut-off
- 303 stainless steel stem, 16 threads/in (NV-251).

| Model Number | Orifice (mm) | Thread Size | Dimensions (mm) | | | | | | |
|--------------|--------------|-------------|-----------------|----|-----------|----|----|----|----|
| | | | A | B | C | D | E | F | H |
| NV-251 | 4,3 | 1/4" NPTF | 57 | 29 | 1/4" NPTF | 57 | 46 | 19 | 19 |
| V-91 | 4,8 | 1/2" NPTF | 89 | 32 | 1/2" NPTF | 64 | 32 | 37 | 37 |



▼ From left to right: V-152, V-66, V-82, V-161, V-42, V-17



Your Hydraulic Control Solution



Valve Applications

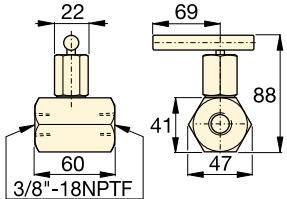
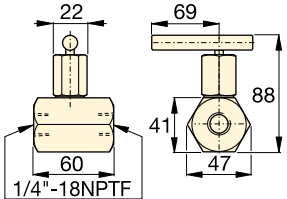
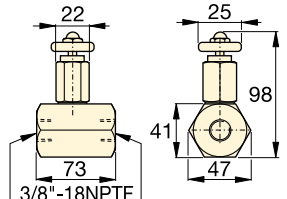
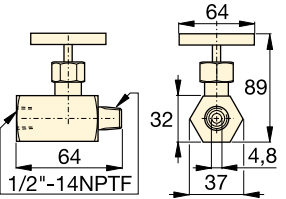
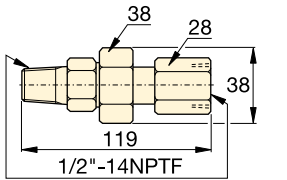
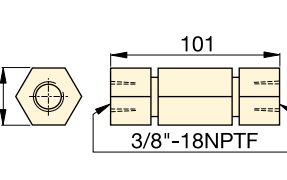
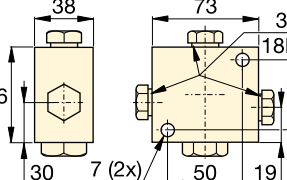
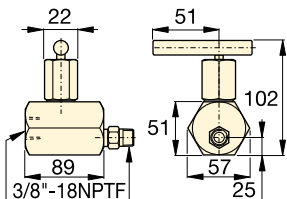
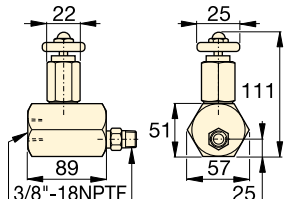
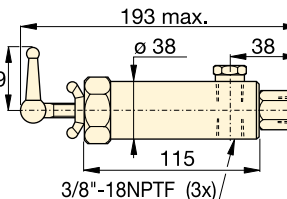
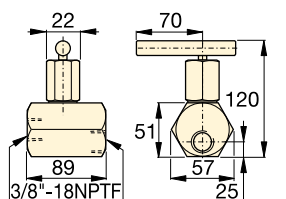
To see these valves used in typical hydraulic circuits, please see our 'Yellow Pages'.

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▼ The V-152 pressure relief valve limits the pressure or force developed in the hydraulic system.



- All valves are rated for 700 bar operating pressure
- All valves feature NPTF porting to insure against leakage at rated pressure
- All valves are painted, coated, or plated for corrosion resistance
- Viton® seals (in V-66NV and V-152NV) for high temperature applications, nickel-plated for maximum corrosion resistance.

| | | | |
|---|---|---|---|
|  <p>V-82</p> |  <p>V-182</p> |  <p>V-8F</p> |  <p>V-91</p> |
|  <p>V-10</p> |  <p>V-17</p> |  <p>V-42</p> | |
|  <p>V-66, V-66NV</p> |  <p>V-66F</p> |  <p>V-152, V-152NV</p> |  <p>V-161</p> |

Valve dimensions in mm

Pressure and Flow Control Valves



Control Manifolds

For two or four port manifolds with integral flow control valves, see the manifold page of the System Components section.

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Fittings

For additional fittings see the fitting page of the System Components section in this catalogue.

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V Series



Maximum Operating Pressure:
700 bar

| Valve Type and Model Number | | Description | | Hydraulic Symbol |
|---|--|---|---|------------------|
| Needle Valve V-82 V-182 V-8F | | V-82: To control cylinder speed. Can also be used as shut-off valve for temporary load holding. 3/8" NPTF female ports. V-182: Same as V-82, but with | 1/4" NPTF female ports. Also suitable for gauge snubbing (also V-82). V-8F: Like V-82, but with very fine metering for precise flow control. Not recommended as shut-off valve. | |
| Snubber Valve V-91 | | V-91: Infinitely adjustable for metering oil out of a gauge to prevent snapping of gauge pointer when load or pressure is suddenly released. Also suitable as shut-off valve to | protect the gauge during high cycling applications. 1/2" NPTF male and female threads for use with GA-1, GA-2 or GA-4 gauge adaptors. | |
| Auto Damper® Valve V-10 | | V-10: To be used when gauge pressure must be monitored during high cycle applications. Creates a flow resistance when load is released suddenly. | No adjustments are necessary. 1/2" NPTF male and female threads for use with GA-1, GA-2 or GA-4 gauge adaptors. | |
| Check Valve V-17 | | V-17: Ruggedly built to resist shock and operate with low pressure drop. Closes smoothly without pounding. 3/8" NPTF female port. | | |
| Pilot Operated Check Valve V-42 | | V-42: Can be mounted at the cylinder to hold the load in case of system pressure loss. Normally used with double-acting cylinders where pilot port receives pressure from a Tee- | fitting in the cylinder retract line. 3/8" NPTF female ports. Pilot pressure ratio 14% (6,5:1). | |
| Manually Operated Check Valve V-66, V-66NV * V-66F | | V-66, V-66NV: For load holding applications with single and double acting cylinders. Valves allow oil to flow back to tank when cylinder retracts. V-66NV with Viton seals, | nickel-plated. V-66F: Similar to V-66, but with very fine metering capability for precise flow control. V-66F is not designed for load holding. | |
| Pressure Relief Valve V-152 V-152NV * | | V-152: Limits pressure developed by the pump in hydraulic circuit, thus limiting the force imposed on other components. Valve opens whenever preset pressure is reached. | To increase pressure setting, turn handle clockwise. Includes: • 0,9 m return line hose kit, • ± 3% repeatability, • 55-700 bar adjustment range. | |
| Sequence Valve V-161 | | V-161: To control oil flow to a secondary circuit. Flow is blocked until system pressure rises to the V-161 setting. When this pressure level is reached, the V-161 opens | to allow flow to the secondary circuit. A pressure differential is always maintained between the primary and secondary circuit. Min. operating pressure: 140 bar. | |

* See page 56 for more information about products for use in high temperature and extreme environment applications.